

**Addis Ababa University
School of Graduate Studies**

**Afan Oromo as a Medium for Science Subjects
The Case of Ghimbi Schools**

**By
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**June 2009
Addis Ababa**

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**A Thesis submitted to the school of Graduate Studies
Addis Ababa University in partial fulfillment of the
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Linguistics**

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Declaration

This thesis is my original work and has not been presented for a degree in any other university and that all source materials used for the thesis have been properly acknowledged.

Wondimu Biratu

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

Shimelis Mazengia

Abstract

Until recently, Afan Oromo was not a medium of teaching and learning in public schools. Currently, the language is, however, serving as a medium of learning in most primary schools of Oromia. This study investigates the effect that the use of Afan Oromo as a medium of learning for science subjects bears on student performance.

The research, which was conducted on the second cycle of two primary schools of Ghimbi town, particularly on grades 7 and 8, attempts to compare achievements resulting from learning science in Afan Oromo with learning science in English. The finding of the study indicates that the majority of the respondents opted for Afan Oromo as a medium of instruction for science subjects in grades 7 and 8. However, with regard to their achievements, they are neither advantaged nor disadvantaged. It was found that they have no problem in using Afan Oromo as a medium for learning science subjects.

At the secondary level, particularly in grades 9 and 10, the competency of the students in English has been found to be low. For instance, it was reported that they have a serious problem of understanding TV lessons offered in English.

Based on the findings, the study recommends that improving the capability of Afan Oromo as a medium for science subjects should be given due attention. Besides, effort must be made to improve the competency of students in the English language in view of the fact that the language is so important for future opportunities. The inadequacy of teachers and textbooks in terms of both quantity and quality is another problem that needs to be addressed. Furthermore, taking the concern transpired during the research undertaking, the study suggests that private colleges and teachers teaching colleges need to revise their curriculum in order to provide adequate training for their trainee.

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Definition of terms

Achievement	Students performance in science subjects.
First cycle primary school	Grades 1 to 4.
Medium of instruction	A language of teaching and learning. Also in the study, referred to as ‘medium of instruction’ or ‘medium of education’ or ‘language of teaching and learning’.
Mother tongue	The first language a person acquires as a child.
New education Policy	Education policy designed in 1994 by MOE.
Primary school	Grades 1 to 8, where primary education takes place.
Science subjects	In the study: Biology Chemistry and Physics. It is used interchangeably with the term ‘science’
Score records	Exam points earned by students and kept in school records.
Second cycle primary school	Grades 5 to 8. In the study the term refers to grades 7 and 8.
Vernacular language	In this paper the term vernacular is used interchangeably to the term mother tongue.

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Acronyms and Abbreviations

Art	Article
E.C	Ethiopian Calendar
ETPI	The Education and Training Policy and Its Implementation
ESNLA	Ethiopian Second National Learning Assessment
ICDR	Institute of Curriculum Development and Research
MOE	Ministry of Education
NA	Not Applicable

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Table 4.1 Background of respondents

No.	Personal details		Respondents									
			Students				Teachers		Directors		Officials	
			Grades 7 and 8		Grades 9 and 10		Quantity	%	Quantity	%	Quantity	%
			Quant	%	Quantity	%						
1	Sex	Male	88	44.67	48	48.48	4	100	3	100	3	100
		Female	109	55.32	51	51.51	-	-	-	-	-	-
		Total	197	100	99	100	4	100	3	100	3	100
2	Age	10-13	54	27.41	-	-	-	-	-	-	-	-
		14-17	138	70.05	83	83.83	-	-	-	-	-	-
		18-21	4	2.03	16	16.16	-	-	-	-	-	-
		22-25	1	0.50	-	-	2	50	-	-	-	-
		26-29	-	-	-	-	-	-	-	-	-	-
		30-33	-	-	-	-	1	25	2	66.6	1	33.3
		>34	-	-	-	-	1	25	1	33.3	2	66.6
3	Education	7-8	197	100	-	-	-	-	-	-	-	-
		9-10	-	-	99	100	-	-	-	-	-	-
		11-12	-	-	-	-	-	-	-	-	-	-
		12+1-12+2	-	-	-	-	2	50	-	-	-	-
		Diploma	-	-	-	-	2	50	2	66.6	1	33.3
		Degree	-	-	-	-	-	-	1	33.3	2	66.6
4	Experience	1-5	-	-	-	-	2	50	-	-	1	33.3
		6-10	-	-	-	-	-	-	1	33.3	-	-
		11-15	-	-	-	-	1	25	1	33.3	-	-
		16-20	-	-	-	-	-	-	-	-	1	33.3
		>20	-	-	-	-	1	25	1	33.3	1	33.3
5	Mother tongue	Afan Oromo	197	100	99	100	4	100	3	100	3	100
		Non Afan Oromo	-	-	-	-	-	-	-	-	-	-

CHAPTER ONE

1 Introduction

It is generally believed that education is a vital tool for social, economic, and political development of a nation. That is, it makes positive contributions towards economic growth, social transformation, and the improvement of individual welfare. Particularly, of effective science education is a vital means for national development.

In order to benefit from effective education, the factors that affect it should be identified and properly dealt with. Among the typical factors that affect education are: medium of instruction qualification of teachers, curriculum, instructional materials, and class size. While the appropriateness of these factors enhances student achievement, the inappropriateness impedes performance.

As cited in Teshome (2007), the Ethiopian Second National Learning Assessment (ESNLA) identifies six factors that have impact on students' achievement in Ethiopia, namely: students' background and behavior, language of instruction, teachers, school structure and curriculum materials, instructional support, and school management. Of these factors, as Teshome points out, next to students' background and behavior comes language of instruction as an important factor that influences the quality of schooling in Ethiopia.

Hence, in Ethiopia the impact of language of teaching and learning is one of the top factors that promote or impede progress in education.

1.1 Background

The effectiveness of education depends on the effectiveness of communication between teachers and students; on the other hand, effective communication takes place when the appropriate language is used. Good knowledge of language of learning helps students to easily understand their lesson and to express their thoughts and feelings. Thus, many educationalists argue in favor of mother tongue as the best medium of learning.

However, according some views the use of mother tongue as a language of learning may affect schooling negatively. The views state that although mother tongue provides a non-threatening and convenient environment for students, in multilingual countries, due to the multiplicity of languages it can also be a problem. In the latter case, it is difficult to provide textbooks and other educational materials as well as capable teachers for all languages. Thus, unless the necessary conditions are fulfilled only using mother tongue cannot assure good results in education. Hence, in view of the preceding opposite arguments, the use of mother tongue as a language of education can either positively or negatively affect achievement of the students.

Ethiopia is a multilingual country. According to the country's education policy, nations and nationalities of the countries are encouraged to use their own languages as a medium of education at the primary school level. According to the policy, there are two cycles in primary education. The first cycle includes grades 1- 4 while the second cycle includes grades 5-8. However, the implementation of mother tongue education varies from region

to region based on human and material capacity. Hence, some regions use mother tongue up to grade 3 while others use up to grade 6 or 8.

Accordingly, many local languages have begun to serve as a medium of education at primary school level. Afan Oromo is one of these languages and is now serving as a language of teaching and learning up to grade 8 in most primary schools in Oromia. It is also given as a subject in the various secondary schools and universities of the country. In some universities, it is offered as a field of study for a bachelors and masters degree.

The concern of this research is to investigate the effect of using Afan Oromo as a medium for science subjects on students' attainment in grades 7 and 8 of two primary schools in Ghimbi town. Ghimbi is the administrative center of Western Wollega Zone in Oromia Region located 441 km west of Addis Ababa.

Ethiopia is currently implementing the policy of mother tongue education. However, different critiques are being forwarded against the effectiveness of the policy. It is in this context that the present study is attempting to evaluate the effect of Afan Oromo as a medium for science subjects at the second cycle primary school level. The presentation of the study, that is, the thesis consists of five chapters. The first chapter deals with the introduction which includes a general background, a brief portrayal of the Oromos and their language, as well as the objectives, scope, and importance of the study. The second chapter contains review of literature related to the undertaking of the research—while third one presents the design and methodology applied. The presentation of the data along with the analysis and interpretation are in the

fourth chapter. Finally, summary of the study, conclusions, recommendations, and issues for further research are dealt in chapter five.

1.2 The Oromo people and their language

The Oromos are the largest ethnic group in Ethiopia. They belong to the Eastern Cushitic language speaking group of peoples. They reside in Ethiopia, Kenya, Somalia (Jeylan 2008:33); also in Tanzania, and probably in Uganda, Rwanda, and Burundi (Lamessa 2007:12). The Oromos are the largest national group in the horn of Africa and the largest of the Cushitic speaking peoples (Mohammad 1994:4). They used to, and in some cases still do, exercise a form of democratic self-government known as *Gada*.

By and large, scholars agree that Afan Oromo has the largest native speakers in Ethiopia as well as some of the major languages in Africa. Unlike the large number of its speakers the language has not developed compared to some African languages. For instance, Baye notes, in Ethiopia, although Afan Oromo has the largest number of native speakers no attention has been given to its development (1981:1).

Afan Oromo was, thus, limited to serving, the traditional life of the society and was not developed for pedagogical purposes and hence scientific concepts were not familiar to the language. However, currently, it is serving as a medium of instruction in most primary schools in Oromia. It is this latter situation in which Afan Oromo has attained the status of being a medium of formal education that the present study has focused , as indicated earlier, on the impact of the language on science subjects while serving as a medium.

1.3 Statement of the problem

There are different opinions regarding teaching-learning science subjects in Afan Oromo. Some say science terms are strange to the language and thus using them without proper translation is confusing the students and is affecting their performance. Others say in order to understand the contents of science subjects, students should be some how educated in Afan Oromo. Still some others say that since there is shortage of qualified teachers in Afan Oromo, attempting to deliver science subjects in the language is a problem.

However, what matters is the reality on the ground. The reality is that science subjects are being taught in Afan Oromo to whom the language is a mother tongue. What is the situation that the students and teachers are in? What does student performance testify? Thus, the major problem the study tries to address is:

What is the effect of teaching-learning science subjects in Afan Oromo at the second cycle of the primary school of Ghimbi?

To this end, the following questions are treated in this study.

1. Has Afan Oromo as a medium of learning brought about differences in students' achievement?
2. Does the use of Afan Oromo as a medium of learning in grades 7 and 8 affect student achievement at the secondary school level?
3. What is the attitude of students, teachers, directors, and officials toward using Afan Oromo as a medium of instruction for science subjects in grades 7 and 8?
4. Are there adequate human and material resources to use Afan Oromo as a medium of instruction for science subjects?

1.4 Objectives

1.4.1 A general objective

The concern of the study is to investigate the effect of using Afan Oromo as a medium for science subjects in the second cycle of the primary schools of Ghimbi town. The research will essentially focus on grades 7 and 8 students whose mother tongue is Afan Oromo.

1.4.2 Specific objectives

The research intends:

- To find out about the performance of students in Biology, Chemistry, and Physics who are taught in Afan Oromo as a mother tongue in grades 7 and 8.
- To compare the performance of students taught science in Afan Oromo as a mother tongue with that of students taught in English.
- To examine the attitude of students, teachers, school directors and education officials toward using Afan Oromo as a medium for science in grades 7 and 8.
- To find out about the qualification of teachers, availability and appropriateness of textbooks for teaching science in Afan Oromo in grades 7 and 8.

1.5 The scope

There are five second cycle primary schools in Ghimbi town. Of these, the study was conducted on two of them which have a long tradition in providing education at the second cycle primary school level. The focus is on the performance of grade 7 and 8 students in science subjects. Accordingly, the score records of the students of 2000 E.C are examined.

For the purpose of comparison, the study will examine the achievement records of those students who learned science in English in grades 7 and 8 in 1981 E.C. Furthermore, the achievements in science subjects of grades 9 and 10 students in 2000 E.C is compared with the achievements of grades 9 and 10 students of 1981 E.C. With respect to grade 9 and 10 the comparison is made between those who were taught science in Afan Oromo in grades 7 and 8 but continued in English in grades 9 and 10 and those who were taught science in English in grades 7 and 8 and continued in English in grades 9 and 10. The effort is to find out about the effect of Afan Oromo on achievements in science subjects in grades 7 and 8.

1.6 Delimitation

Although, Afan Oromo is serving as a medium of education in most primary schools of Oromia, the research is limited to Ghimbi town. It is also limited to grades 7 and 8. Student achievement can be affected by different factors: however, this study will focus on the effect of language, in this case Afan Oromo, on student achievement in science subjects.

1.7 Importance

The researcher believes that the study conducted on Ghimbi schools can serve as a pilot scheme that could be extended to other schools in the Oromia Regional State. Moreover, the study can encourage research on the use of the other mother tongues of the country for science subjects in particular and for education in general. That in turn could contribute to the improvement of the overall system of education of Ethiopia.

CHAPTER TWO

2 Review of related literature

So far many researches have been done on languages of instruction in Ethiopia including Afan Oromo. Of these, Cohen (2000), Teshome (2005), Shimelis (2004), and Getu (2006) can be mentioned. Most of them deal with challenges and/or opportunities of implementing mother tongue education in Ethiopia. Except Teshome, none of them deals with the effect of using Afan Oromo as a medium of instruction for science subjects. Teshome (2005) studied the impact of mother tongue on academic achievements of grade 8 students in Ethiopia. He attempted to identify that students with mother tongue education achieved better results than those educated in other tongues. However, Teshome's study has a nation wide scope in which he surveyed the effects of languages of education on grade 8 student achievement of 213 schools in Ethiopia. Thus, as far as the knowledge of the researcher goes, no comprehensive study has been conducted to date on the effect of Afan Oromo on student achievement in science subjects in grades 7 and 8.

It is a common knowledge that language is decisive factor in transmitting knowledge. In view of this assumption and the sensitivity of issues related to language, this chapter will attempt to review the literature on problems related to the topic the thesis is concerned with. In the sections that follow, we shall look at the role language plays in education in general and in the Ethiopian context in particular, advantages and disadvantages of mother tongue education as well as experiences of some countries with respect to the impact of language on students performance. The chapter will then

examine the effect of using Afan Oromo as a teaching-learning medium for science subjects in grades 7 and 8.

2.1. Language of education

As a social instrument language is a means of communicating and sharing ideas and it is also a means of gaining access to important knowledge and skills which are in turn the most important means of social change (Shimelis 2004: 10, Ohannessian and Ansre 1975:54). Bokamba and Tlou (1977: 44) also emphasize the role of language in national development and underline that development cannot be achieved without incorporating the language of a country into the educational system. Education by its nature is full of interactions which are mediated by language. Students interact with their teachers, with their books and peers through language. Thus, learning depends basically on the ability of the learners to understand and to express themselves in the language that they use for learning (Altaye 2001:2).

Generally, different countries design their language policies for education depending on the objectives of their education policy. For instance, Mackey (1972:49) argues that in a multilingual society, language policy in education should depend on the objective of the education system. Thus, different countries employ either a local or an international language depending on their objectives. According to Mackey, if priority is given to science and advanced technology, language policy in education has to give emphasis to one of the international languages, which is a better access to knowledge. If, however, the objective is self-sufficiency and self reliance, priority has to be given to local languages (1972:20).

2.2. Language of education in Ethiopia

In the nineteenth century when modern education was introduced in Ethiopia, the first modern school was opened for all who were able to read and write Amharic without age limit. At this initial stage, however, the medium of instruction was French (Pankhurst 1969:20). McNab also mentions that at the advent of modern education in Ethiopia emphasis was given to using European languages for learning. At the time, sympathy for teaching in Ethiopian languages was in the mission schools than in the government schools. In public schools, the government adopted the French system of education along with the French language (Shimelis 2004:33). For instance, in the American mission school in Dambidollo Afan Oromo was the medium of instruction, while in the Seventh Day Adventist School in Addis Ababa the medium was Amharic (McNab 1989:77-78).

During the Italian occupation in the 1930s a radical change took place in language policy. The fascists used seven different Ethiopian languages and Arabic for instruction. Tigrinya and Arabic were used in Eritrea, Amharic in the Amhara region, Amharic and Afan Oromo in Addis Ababa, Harari and Afan Oromo in Harar, Afan Oromo and Kafficho in Oromia and Sidama, and Somali in the Somali region (McNab 1989:78). According to Shimelis (2004), this language policy of the fascists was not essentially for pedagogical purposes, but rather to divide and rule the country based on ethnic and religious lines. Following liberation, a new language policy was implemented and English became the medium of instruction starting from grade three while Amharic was taught as a subject and served as a medium of instruction in grades one and two (Muluneh 2000:31).

After the 1974 Revolution, the Derg regime adopted a new language policy and stipulated in its constitution (Art. 2 No. 5) the equality of nationality languages of the country. Thus, 15 nationality languages namely: Amharic, Afan Oromo, Tigrinya, Walaitinya, Somali, Hadiya language, Kembata language, Gedion language, Kunama language, Tigre, Sidama language, Silitie language, Afar language, Kefamochi language, and Saho language were introduced as mediums of instruction in the national literacy campaign of adult education (Shimelis 2004:35).

After the downfall of the Derg, again a New Education and Training Policy was formulated by the Ministry of Education (MOE). According to this policy, primary education would be given in the nationality languages while the language of instruction beyond the primary level of education would be English.

In Ethiopia, since the days of the first modern school, many changes have taken place with regard to educational language policy. Currently, about 20 nationality languages are serving as mediums for primary education. However, there is no consistency in implementing the language policy in schools. In some regions local languages are used up to grade 8, while in others up to grade 3 or 6 (Shimelis 2004). In Oromia Afan Oromo is serving as a medium of teaching and learning up to grade 8; yet in this region too there are exceptions.

2.3. Mother tongue

‘Mother tongue’ is the language through which a person perceives the surrounding world and through which initial concept formation takes place (Pattanayak 1986:7). Mother tongue is also the medium through which a child establishes kinship with other children and with adults around (Tansley 1986:8).

Mother tongue helps in socializing the child to the society. As Pattanayak (1986:8) puts it, if a child loses his mother tongue he also loses his self identity and the traditional life style of the speech community; that again leads to intellectual poverty and emotional unproductiveness. If so, how significant is the impact of the mother tongue in education? What are the advantages and disadvantages? The answers to these and related questions can be obtained from the subsections below.

2.3.1. Mother tongue education

As mentioned above, mother tongue is a language through which an individual first distinguishes the environment around him. Mother tongue education, on the other hand, is using one’s first language at school as a medium of learning.

The effectiveness of education depends on the effectiveness of communication between learners and the teachers (Fasold 1984:291) and effective communication takes place when the appropriate language is used. According to Fasold (1984: 294) as well as Webb and Kembo-Sure (2000:293), unless students are proficient in the language of learning, they

face difficulties in understanding what is said to them and to express their thoughts and feelings.

Regarding the implication of language of instruction, Sibayan has this to say:

If a language is the language of instruction, most of the time it has become the language of government, of the courts and the law, of business and industry, and of science and technology... four important domains in the life of the society (1975:120).

This implies that a language that has attained the status of serving as a language of instruction is not only a means of communication but it is also a means for economic development and power. Thus, using one's language as a medium of instruction is elevating the language to a means for economic advantage and power (Sibayan 1975:121).

On the other hand Yadav underlines the role of language as follows:

It has now become a commonplace of contemporary thinking that language is a highly emotionally charged issue, an aid and a barrier to national development, an advantage and disadvantage to an individual, a centripetal force that may unite a nation, and also a centrifugal force that may drive a society apart and ultimately divide a nation (1992: 177).

Hence, the issue of language of instruction in a multilingual country is indeed critical and care should be taken in addressing it. It is common

knowledge that the use of mother tongue at least at the level of primary grades is recommended by most scholars. On the contrary, such scholars as Baker (1993) and Communis (1984) advocate the use of local and international languages as mediums of instruction side by side which would be followed by smooth transition to the international language. Although the use of mother tongue as a medium of teaching and learning is widely accepted there is yet a debate. Those who are in favor of mother tongue education argue that it has pedagogical, psychological, and sociological advantages while those who are against it argue from the viewpoint of economic, political, and linguistic problems.

2.3.2. Advantages of mother tongue education

As mentioned above, using mother tongue as a language of instruction has various advantages which can be categorized as pedagogical, psychological, and social advantages.

2.3.2.1. Pedagogical advantage

Mialaret suggests that learning through mother tongue is easier and pedagogically important for students since they can acquire meaningful knowledge in their own language (1979:161). Similarly, Gfeller argues that using mother tongue as a language of learning increases cognitive development and active participation of a child. Gfeller further underscores that students can actively participate in teaching-learning processes if they are proficient in the language of instruction (1999:21).

The extreme view regarding mother tongue education is like the one in Bokamba and Tlou (1977:45) which suggests that students would be

academically poor unless they are educated in their native language. Thus, the use of foreign language stifles students progress in education and results in a country's dependence on foreign experts. Supporting this view Spolsky (1986:3) also generalizes that learning in another language discourages the effort and chance of success in the educational system.

2.3.2.2. Psychological advantage

Students who start schooling with their first language are psychologically free from frustration and tension (Spolsky 1986:5 and Webb and Kembo-Sure 2000). UNESCO also agrees with this idea and states that students who are instructed in their home language have high capacity to express themselves and their communication becomes efficient, while the communication ability of the students instructed in other languages is slowed down. It further argues that if the language of learning is another tongue students lose self confidence to communicate their ideas in class because of lack of proficiency in that language.

2.3.2.3. Sociological advantage

As Spolsky (1986:3) points out, every language expresses and symbolizes its own culture better than any other language. Hence, when mother tongue is made to serve as a means of learning, it makes easier for students to understand the social and cultural values of the society. Spolsky further notes that education does not bring an expected change if it does not make the children understand their society and culture.

Similarly, Bokamba and Tlou argue that using a foreign language as a medium of instruction would discourage the development of indigenous

language and culture, which in turn can affect a nation's development (1977:46). O'Doherty (1969:253) also point out that, extensive use of a foreign language in education has negative effects in the socialization process. Unlike the preceding positive views there are those who consider mother tongue as disadvantageous.

2.3.3. Opponent views toward mother tongue education

Although mother tongue is often considered the best medium for education, there are some views forwarded against the implementation of it in formal education. For example, considering the usefulness of European languages for an upward mobility and for worldwide communication as well as for economic advantages Oluwole (2008:41) argues in favor of European languages. Thus, according to him, children educated in a European language would be exposed to one of the dominant world languages in their early age.

Other view forwarded against the use of mother tongue education is based on the sense of national feeling. For instance as Maghimbi (1996), Akindele (2000) state, in multilingual country if mother tongue is used as a language of learning it may facilitate fragmentation and prevails national disunity.

Shortage of learning materials is also argued by opponents of mother tongue education as hindrance. According to Nielson and Cummings (1997), the use of mother tongue as a medium of education with scarcity of instructional materials, lack of alternative reference, shortage of well-trained teachers and insufficient vocabularies has no meaning and fruitless (Kadeghe 2003).

Negative attitude of speech communities towards using their own language as a medium of learning is also part of the views that are identified by scholars. For instance, Rubagumya is one of the proponents of mother tongue education. However, in his (1990) work he identified negative attitude of parents toward mother tongue as a language of learning. He thus points out that most parents in Nigeria want their children to use English from the beginning of their schooling. Because they believe that it helps their children to be competitive.

Sibayan (1975) also conducted attitude test in Philippines and identified that most parents favor the use of Philipino as a medium of instruction only for non-scientific and non-technical subjects while they prefer English for science subjects. Sibayan indicates that parents believe in using English as a medium of learning.

Nonetheless, these opponent views are pedagogically not supported and mother tongue education is acceptable for both scholars and many others. Hence, brief descriptions of the major views forwarded against the implementation of mother tongue education are given bellow.

2.3.3.1. Economic problem

There are two different views related to economic problems that are directed against the implementation of mother tongue in education, particularly in a multilingual country. Yakub and Anthony (1999:289) relate the problem to the cost of introducing new languages which require the preparation of textbooks and other educational materials as well as training teachers in the various vernaculars. The other view as Mikes (1986:16) put it concerns that

students who are taught in a language of minor function would be at a disadvantage since they would be incompetent in the world market for employment. Mikes says that the choice is, “whether to save the child or the language.” Those who promote the use of mother tongue as a medium of instruction for ethnic and nationalistic reasons are, as Mikes states, “promoting unproductive tongue and diminishing the potential of their people for economic and scientific development” (1986:17).

2.3.3.2. Political problem

Some scholars argue against mother tongue education in a multilingual country considering it a threat to sociopolitical unity. For instance, Shimelis (2004:19) says that using each and every language spoken in a country as a medium of instruction may interrupt the efforts being made to build one socioeconomic nation and may affect national solidarity. According to Shimelis, encouraging mother tongue in a multilingual country may also disrupt communication between citizens and particularly restrict minority groups to their local communities. Supporting this idea, Rubunza (1998) (in Shimelis 2004:20) states that using all ethnic languages as mediums of instruction in a multilingual country is creating tribalism. He further notes that promoting mother tongue education creates a wide social gap, enforces separation, hinders the spread of modern ideas, and creates a strong feeling of regionalism.

Thus, opponent views against the use of mother tongue education can be summarized as follows:

- An international language is necessary for interaction in the world community.

- National unity in a multilingual society can be best achieved by using a foreign language because of its neutrality.
- Vernaculars are not adequately developed to express modern scientific and technical concepts.
- It is better to go straight with a foreign language that will inevitably come rather than start with a native language and go to foreign one on.

2.4. Impact of language of instruction on student achievement

Student academic performance may be affected by a number of factors. As indicated earlier one of these factors is inadequacy of communication ability of pupils and teachers in the language of teaching and learning. Hence, the language of education should be the one that both teachers and students understand well and obviously this language is a mother tongue. Caillods et al (1996:79) states, “Children tend to learn more easily at school and perform better if the language of instruction and learning used is their mother tongue.” However this work does not undermine the importance of international languages and in fact it note that international languages equip students for further study, and facilitate access to information and literature on recent developments that are difficult to provide in local languages.

In Ethiopia, Cooper, Singh and Abraha (1976) examined the impact of mother tongue and other tongue on the educational achievement of Keffa and Arsi. At the time of their study, the language of instruction was Amharic, and they reported that those students with Amharic mother tongue had got the chance to be educated than those with other tongue. A similar finding is reported by Derese et al (1990) in Habtamu (1996:15). According

to this work, scholastics achievement tests were conducted in Mathematics at Koladega Damot, Metcha, Welayita Sodo, and Harar Zuria where the language of instruction was Amharic and it was found out that students with Amharic as a mother tongue registered better achievements.

Generally, there is no consistency with respect to the results of studies conducted on the effect of language of education on student performance. As discussed earlier, some argue in favor of mother tongue while others argue in favor of international languages.

For an overview of the effect of language of learning on students' achievement in science subjects let us look at the experience of three countries, one from Asia and the other two from Africa namely: China (Hong Kong), Nigeria, and Eritrea. The countries were selected basically due to their multilinguality. Hence, China (Hong Kong) was selected since it has a long tradition in using English as a medium of education and is currently implementing mother tongue education. Nigeria was selected for the reason that there exists disagreement among the countries educationalists in the case of mother tongue education. On the other hand, Eritrea was considered because of the similarity of its language policy at least in theory to that of Ethiopia as well as due to historical relations between the two countries.

2.4.1. China (Hong Kong)

According to China's educational policy cited in (Yip et al 2003), the primary schools in Hong Kong use Chinese as a medium of education and English is given as a subject. After six years of primary education, students

are streamed to either English or Chinese as a medium. A comparative study on the achievement of Chinese students learning science in English and those learning in their mother tongue, Chinese, indicates that those learning in English performed much more poorly than their peers learning in their own language (Yip et al 2003:295). However, according to the finding, a medium of instruction does not cause any significant difference for the high and low ability students while it affects the medium level students.

Yip et al (2003:301) citing Lo (1991) also tries to assess the achievements of higher secondary school students (grades 10-12) in Mathematics receiving their education in Chinese and English. The study was an achievement test on 2,638 students in each language and compared their scores. According to the study, students taught in Chinese show higher achievement than those taught in English only or those taught in a mixed code, that is, Chinese and English.

To generalize, the preceding two studies reveal that at the primary school level the average students who were taught science in their mother tongue performed better. Similarly, at the higher secondary level those taught Mathematics in the mother tongue fared better. That means, in the case of Hong Kong, mother tongue education is found to be effective for science and Mathematics.

2.4.2. Nigeria

According to the Nigerian National Policy on Education 2004 cited in Makinde and Olabode (2006), the medium of learning in the first three years of primary education should be mother tongue, while after grade 4 the

medium of instruction shall be English. However, as Oluwole (2008:41) indicates that many Nigerians prefer the use of English not only as a medium of instruction in the primary schools but also as a language of communication at home. Oluwole conducted a research to examine the influence of mother tongue on student performance in the English language in the Junior School Certificate Examination and identified that mother tongue contributed to poor performance.

On the contrary to what has been observed in the case of Hong Kong, the tendency in Nigeria is to favor English and also that mother tongue negatively affects performance in English.

2.4.3. Eritrea

After assuming power in 1991, the government of Eritrea issued a new education policy. According to this policy, cited in (Teklemikael 2003:142), the mediums of education are mother tongues.

There are nine different local languages spoken in Eritrea which can be grouped into Nilotic, Cushitic, and Afro-Asiatic (Teklemikael 2003:117). Of the nine different languages spoken in the country, according to Teklemikael, three of them namely: English, Arabic, and Tigrinya dominate in the majority of the schools. Concerning the non-Tigrinya speaking students, the policy demands that they learn English, Arabic, and Tigrinya in addition to their respective vernaculars.

Teklemikael (2003) comments that most schools in Eritrea are mostly devoted to teaching the various languages than focusing on teaching

essential content subjects. He thus generalizes that, “schools have practically become institutes of language.” He further reveals that the outcome of the Eritrean language policy is not as expected and thus in the long run Eritrea might abandon its policy of giving instruction in all Eritrean languages. Teklemikael further expresses his concern that it is not reasonable for the country to spend so much of its limited resource on language teaching.

Having looked at the preceding experiences we now return to Afan Oromo. Here, we will briefly survey the literature on the role of the language both in informal and formal education sectors.

2. 5. Afan Oromo as a medium of education

In view of education, Afan Oromo had been limited until essentially to the informal aspect. That is, although it helped in conveying traditional knowledge and skills, it was not used for teaching subjects in schools. However, now, in addition to its traditional role, it has become a language of teaching-learning in schools. Hence, it serves as a vehicle for both informal and formal education.

2.5.1. In informal education

In any society informal education which precedes the formal one provides children with specific skills that play a key role in the transmission of national cultural values (Rufai 1977:85).

In the Oromo society informal education is highly valued. According to Jeylan (2008: 38), the Oromo traditional life is the domain for informal education. Especially, the traditional education given at each *Gadaa* stage

helps the younger generation to actively participate in the system while storytelling and proverbs inform children about the life style of the society (Lamessa 2007:22). This traditional education which is informal in character provides children with specific skills that are necessary for them to survive and to play the roles expected of them in the society.

Taking its significance into account Asmerom (1973) refers to the *Gadaa* system as a big educational institution where the Oromo society educates and shapes its children for their future careers. Thus, in the Oromo society elders teach children about life in general and about the different aspects of their custom through informal education. It is also in this context that the young members of the society are made to polish their language skills through proverbs, songs, riddles, and storytelling. Afan Oromo is in addition to the services it renders in the informal context, now playing an elevated role of serving as a medium of formal education.

2.5.2. In formal education

Even though the wide coverage of the use of Afan Oromo in school is a recent phenomenon, the first mission school that was opened in Najjo (Wollega) as early as in 1905 used it as a medium of education. The first modern government school, Menilik II School, was established in January 1899 E.C [that is 1907] (Mers'e Hazen 1999 E.C:36). McNab also states that Afan Oromo served as a medium of instruction in mission schools until Amharic became the official language of the country in the 1940's. During the Italian occupation too, it served the same purpose throughout the Oromo land including Addis Ababa. However, since the restoration of Emperor Haileselassie the use of Afan Oromo for educational purpose was

terminated until it was made one of the fifteen nationality languages which were used for literacy during the days of the Derg regime (1989:78).

CHAPTER THREE

3. Research design and methodology

The meaningfulness of a research project basically rests upon the topic it is set to deal with and the objectives it is braced to achieve. Equally important is the mechanism devised for the realization of the intended goals. Accordingly, this chapter presents briefly how the study is designed and it also outlines the methods considered appropriate for the undertaking.

3.1 Research setting

As indicated earlier, this study is concerned with: the effect of Afan Oromo on student achievement in science subjects in grades 7 and 8 of Ghimbi schools. The researcher opted for focusing on science subjects because scientific knowledge is so vital for development and educational establishments are supposed to show great concern towards training students in the various fields of science and technology. In imparting knowledge to students the role of the language that serves as a medium is so decisive. Thus the researcher chose to investigate the effect of Afan Oromo on student achievement in science subjects. Grades 7 and 8 are considered for the study as they are the terminal grades for mother tongue education and where the students start learning science subjects as Biology, Chemistry, and Physics.

Ghimbi was identified as a suitable environment for the research for two reasons. First, the researcher is familiar with Ghimbi and its surroundings since it was there that he was born, brought up and educated up to secondary level. Consequently, he was confident that he would secure adequate cooperation and assistance from respondents. Secondly, a similar research

on the effect of Afan Oromo on student achievement in science subjects in grades 7 and 8 in the Ghimbi setting has not been conducted.

3.2 Methods of the study

To achieve the main objectives of the study, assessing the effect of Afan Oromo on student performance in science subject in grades 7 and 8, various methods were devised and administered. Respondents were in the main asked to fill in questionnaires. In addition, students score records of the science subjects were examined, textbooks were evaluated and classroom observations were made.

3.3 Sampling techniques

For gathering data from students the systematic random sampling and purposive sampling techniques were employed. Out of five primary schools in Ghimbi two were selected purposely because of their long tradition in providing primary education especially in grades 7 and 8. The two schools are Biftu Ghimbi Primary School and Adventist Primary School. Ghimbi Secondary School which also has a long experience was included in the sampling. In addition to the grades 7 and 8 students of the two primary schools, the grade 9 and 10 students of the secondary school were considered-for the purpose of comparison. In the latter case, the achievements of students who were taught science in Afan Oromo in grades 7 and 8 and continued in English in grades 9 and 10 are compared with those of students taught in English in grades 7 and 8 and continued in English in grades 9 and 10. Thus, from each grade of each school 50 students were selected using the systematic random sampling method which gives the total sample size of 300 students.

The number of students of each grade of each school was divided by sample size of 50. The quotient was then considered as the interval for selecting samples from each list. For example, in Biftu Ghimbi Primary School there were 186 students in grade 8. The plan was to select 50 students. Therefore, 186 was divided by 50, of which the quotient was 3.72. on the basis of 3 every third student was selected from the list of 186 names. The same sampling method was applied for all the selected schools.

With regard to the sampling of the teachers, all those teachers who teach science subjects in grade 7 and 8 in the schools under study were considered. That means, a total of four teachers, that is, three from Biftu Ghimbi Primary School and one from Adventist Primary School were taken into account. Although there were five teachers in both schools one of the teachers from Adventist Primary School did not return the questionnaire. Moreover, an interviews were held with the directors of the two primary schools, with vice director of the secondary school, and with the three education officials—two from the zone and one from the town education office.

3.4 Data gathering instruments

The main data gathering instruments employed for the study are questionnaires, interviews, score records, review of textbooks, and observation of classroom activities. Thus, the data from students and teachers were collected through questionnaires, while data from the school directors and education officials were collected through interviews.

The questionnaires for the teachers consist of four main parts in which teachers were asked to give answers regarding their general background,

their attitude toward using Afan Oromo as a medium of instruction for science subjects in grades 7 and 8, and their attitude toward English as a medium of instruction. Utilization of laboratory, availability of textbooks, and other teaching materials were also included in the questionnaires (for details, see appendix B).

The questionnaires for the students consist three parts which seek information about background, attitude toward learning science subjects in Afan Oromo, availability of textbooks and other educational materials, as well as choice of language for science subjects. Secondary school students—grades 9 and 10 students—were also asked about their attitude toward using Afan Oromo as a medium of instruction and about the quality of teachers. These students, although they are now learning science subjects in English, they were taught these subjects in Afan Oromo while in grades 7 and 8.

Furthermore, the school director and education officials were interviewed about the availability of education materials, capability of the teachers, effects of using Afan Oromo as a medium of instruction and other related issues.

3.5 Procedures of data collection

Before conducting the collection of data, the questionnaires which were prepared first in English were translated into Afan Oromo. Then, to ensure the validity and reliability of the instruments, a pilot test was conducted in one primary school of the town, Melka Bidru Primary School, on a randomly selected 20 seventh and eighth grade students and two science teachers. Finally, after the necessary modifications were made based on the

feedback obtained from the respondents, the questionnaires were administered to the target respondents at the primary and secondary schools selected for the study.

3.6 Data analysis

The qualitative and quantitative methods were used to analyze the data. The data collected through questionnaires were tallied, computed, and tabulated. Then, mean score and percentages figured out for analysis and interpretation. The information gathered through questionnaires and examining score records are analyzed using percentage and mean while information gathered through interviews and classroom observations are reported.

CHAPTER FOUR

4. Analysis and interpretation of data

In this chapter, the data gathered through examining score records, questionnaires, interviews, and classroom observations will be presented, analyzed, and interpreted both qualitatively and quantitatively. The data were collected as indicated above at the Biftu Ghimbi Primary School.

4.1 Background of the respondents

For this study questionnaires were administered to a total of 300 students from Biftu Ghimbi Primary School, Adventist Primary School, and Ghimbi Secondary schools. Questionnaires were also administered to 5 science teachers of the two primary schools. Out of 300 students 296 students and out of 5 teachers 4 (three from Biftu and one from Adventist) filled in and returned the questionnaires. In addition to the preceding respondents, the directors of the two primary schools, and the assistant director* of the secondary school were interviewed. Furthermore, three educational officials, of whom one is [provision of educational supervision and monitoring core process owner] of West Wollega Zone Education Office, the second is an expert in the core process and the third head of the Ghimbi town education office (hereafter ‘education officials’) were interviewed. Information related to age, sex, educational background, year of service, and mother tongue of the respondents are presented in table 4.1 below.

* The intention was to interview the director but since he was too busy at the time, the researcher interviewed the assistant director instead.

All the directors, science teachers, and officials under investigation as seen in the data in table 4.1, are male. This is a reflection of the gender imbalance in the teaching staff and the management of education in Ghimbi.

With regard to the gender profile of the students in the grades of the two primary schools and the secondary school that are under study, we observe a different picture. In grades 7 and 8 of the two primary schools, out of a total of 522 students 271 are female while 251 are male. The female students are more than the male ones by a significant margin. However, grades 9 and 10 of the secondary school, out of 1753 students 803 are female and 923 are male. Here, male students are the majority. The reason why the proportion of the female student population decreases in the secondary school, of course requires a separate inquiry.

As for age, the majority of the students fall within the age range of 14—17. Most of the teachers, directors, and education officials are 30 and above years.

Concerning qualification, two of the respondents of primary school teachers are twelve-plus- two while the other two are diploma holders. This shows that two of the teachers have adequate qualification to teach at the second cycle primary school. The directors of both primary schools are also diploma holders. Two of the three education officials have degrees while the remaining one has a diploma. Regarding service, the majority of the experienced ones are in the management rather than in the field of teaching.

All the respondents, namely: the students, the teachers, the directors, and the officials are native speakers of Afan Oromo. The researcher too, who is originally from Ghimbi town is a native Oromo speaker.

4.2 Analysis and interpretation of score records

Score records are exam points earned by students and kept in school records. They are records of class and/or national exam results. In order to investigate the effect of using Afan Oromo as a medium, one of the factors, the thesis considers is the students scores earned in science subjects. Accordingly, the scores of grades 7 and 8 students who learned science subjects in Afan Oromo in 2000 E.C are compared with the scores of the students of 1981[†] E.C who learned in English. Moreover, the scores of those students who had their science education in grades 7 and 8 in Afan Oromo but switched to English in grades 9 and 10 are compared with the scores of those who had their science education in grades 7 and 8 in English and continued in grades 9 and 10 in English.

4.2.1 Grade 7 and 8 student score records

To analyze the score records of grades 7 and 8 students the mean score is used. Thus, first for each of the 50 sample students the scores of the three subjects: namely Biology, Chemistry, and Physics were added together and then divided by three to get the mean. Again, the mean scores of 50 students from each grade were summed up and the total was divided by the number of the students so as to get the mean of each group (for details, see Appendix H). Thus, the mean scores of grade 7 and 8 students who learned science

[†] The 1981 E. C. scores are those of the General Science. Therefore, the means of these scores for grades 7 and 8 are compared with the means of the Biology, Chemistry, and Physics score of grades 7 and 8 for 2000 E.C.

subjects in Afan Oromo in 2000 E.C are presented in comparison with the mean scores of those students who learned a general science in English in 1981. It is assumed that the comparison could help to identify how far language difference might have affected achievements of the students. The total and the mean scores of the sample students from the two primary schools are presented in table 4.2 below.

Table 4.2 Mean scores of grade 7 and 8 students

School	Grade	Medium of instruction	No. students	Year	Total score	Mean score	National exam score	
							Total score	Mean score
Biftu Ghimbi Primary School	7	Afan Oromo	50	2000	2523.8	50.47	-	-
		English	50	1981	2819	56.38	-	-
	8	Afan Oromo	50	2000	2728.16	54.56	2479	49.60
		English	50	1981	1701	34.02	2026.14	40.42
Adventist Primary School	7	Afan Oromo	50	2000	2794.03	55.88	-	-
		English	50	1981	3089.5	61.79	-	-
	8	Afan Oromo	50	2000	3267	65.34	2804	56.08
		English	50	1981	2655	53.10	2042	40.84

The years in the table are according to the Ethiopian calendar

As shown in table 4.2 above, in grade 7 of both schools students who learned science subjects in English have better results than those students who learned in Afan Oromo.

As opposed to grade 7, in grade 8 students who learned in Afan Oromo fared better both in school and national exams than those who learned in English. In all cases, the means of the exam results are, however, on the lower margin in, that is, the maximum points are in the range of 60s out of 100.

4.2.2 Grades 9 and 10 student score records

As stated earlier, the focus of this study is to find out about the effect of using Afan Oromo for science subjects on the achievement of grade 7 and 8 students. However, the achievements of grades 9 and 10 students in science subjects are also considered for the purpose of comparison. That is, to examine what effect Afan Oromo has on the achievements of grade 9 and 10. Thus, the scores of the students who learned science in grades 7 and 8 in English and continued in English in grades 9 and 10 are compared with those of the students who learned science in grades 7 and 8 in Afan Oromo and switched to English in grades 9 and 10. Again, as computed for the primary schools above, the comparison is made using the mean scores of the sample students (for details, see Appendix H). The following table presents the summary of the mean scores of grade 9 and 10 students in science subjects.

Table 4.3 Mean scores of grade 9 and 10 students

School	Grade	Subject	Medium at Grades 7 & 8	Medium at grades 9 & 10	Year	Total score	Mean score
Ghimbi Secondary School	9	Biology	English	English	1981	2901.5	58.03
			Afan Oromo	English	2000	2943.5	58.87
		Chemistry	English	English	1981	2922.5	58.45
			Afan Oromo	English	2000	2435	48.7
		Physics	English	English	1981	2667.5	53.35
			Afan Oromo	English	2000	2861.5	57.23
	10	Biology	English	English	1981	3166	63.32
			Afan Oromo	English	2000	3234.5	64.69
		Chemistry	English	English	1981	2945	58.9
			Afan Oromo	English	2000	2935.5	58.71
		Physics	English	English	1981	2223	44.46
			Afan Oromo	English	2000	3395	67.84

Total score = The total score of 50 sample students

Mean score = The total score divided by the number of the sample students (50 students)

In table 4.3 above no striking impact is observed on student achievement due to language difference. The only marked difference observed, though relatively not so significant, is in grade 9 Chemistry and grade 10 Physics. In the former case, those students who switched from Afan Oromo to English scored comparatively less, while in the latter case those who continued in English got comparatively lower points for which it does not seem easy to account.

Apart from the preceding two isolated cases of Chemistry and Physics, the trend reflected by the data in table 4.3 above is that learning science subjects in grade 7 and 8 in Afan Oromo did not have impact on student achievement in science in later grades. To identify the effect of language of instruction on the achievements of grade 8 students, Teshome (2007:74) conducted a student achievement test in 213 schools in Ethiopia. He thus, found out that those students who studied Mathematics and Physics in their mother tongue

scored better than those who learned the two subjects in English. Nonetheless, without neglecting the effect of other factors, the data in table 4.3 does not corroborate Teshome's generalization as a distinct effect of Afan Oromo on student achievement in science is not manifested as opposed to the effect of English. Similar to the mean scores of grade 7 and 8 students, those of the grade 9 and 10 students of Ghimbi Secondary School are on the lower margin.

4.3 Opinions of primary school directors on student achievement

The primary school directors of the two sample schools were interviewed about the competency of their students in grades 7 and 8 in science subjects. They responded that the achievements of the majority of the students are low. Although better achievements are expected from mother tongue education, as the director stated, different factors have contributed to the low results. According to the directors, the factors are lack of diligence of the students, absence of continuous evaluation of student performance in the lower grades, and shortage of capable teachers.

The directors pointed out that, according to the new education policy, in grades 1-4 practically no skill development test is administered and rather the students are promoted to the next grade without acquiring the necessary knowledge. As stated in ETPI (2002:42), "At this level, almost all students, with the exception of those with extreme learning handicaps (or challenger) pass from grade to grade without having to repeat class." Hence, as revealed by the directors, first the students are not made to develop the sense of achievement through exams; and secondly all students including those who are unable to write even their names are promoted and enter the next grade

in mass. Thus, according to the directors grade 7 and 8, students are the result of this process. Besides, as underscored by the directors, there is shortage of teachers both in quantity and most of all in quality, to shape the students. The directors generalize that unless the problems facing the educational process are comprehensively addressed, solving the problems of medium of instruction alone would not impact on the quality of education.

4.4 Secondary school assistant director toward student achievement

The assistant director of the secondary school was interviewed as regards on the achievements of the students who learned science subjects in Afan Oromo in grades 7 and 8 and switched to English in the secondary school. According to him, although it is impossible to clearly indicate the reasons most of the students are currently not equipped with the adequate level of English proficiency which would help them to learn content subjects effectively in secondary schools.

According to the assistant director, in the secondary schools there is a significant dose of instruction in English through the satellite TV. In this type of instruction unless the students have adequate knowledge of the language that is English, they face difficulty in understanding the lesson. Thus, inadequacy of the students' English language has to be addressed.

In principle, the assistant director agrees to the advantages of the satellite TV as it fills educational gaps by transmitting subject matters by highly qualified teachers. However, understanding the language of the transmission, that is, understanding English is the crucial problem of the students. He thus concluded that factors that affects English competency of the students

should be identified and improved properly before it corrupt education system of the country.

In the preceding two chapters, we looked at the opinion of directors regarding the student achievement; we shall now examine attitudes on Afan Oromo as a medium for science subjects.

4.5 Attitudes toward Afan Oromo as a medium for science education

A language policy concerning education can be effective basically if teachers and students are positive towards the language. Hence, in this section, an attempt will be made to assess the attitudes of those related to the use of Afan Oromo as a medium of learning in grades 7 and 8 for science subjects.

4.5.1 Attitudes of grade 7 and 8 students and science teachers

The Grade 7 and 8 students as well as the science teachers of the two selected primary schools were asked different questions with regard to their attitudes toward using Afan Oromo for teaching and learning science subjects. Their responses are presented in table 4.4 below.

Table 4.4 Attitudes of grades 7 and 8 students and science teachers

Respondents	Items	SA		A		UD		D		SD	
		Quan	%	Quan	%	Quan	%	Quan	%	Quan	%
Grades 7 and 8 students	Afan Oromo as a medium of instruction for science at my grade level is good.	140	71.06	41	20.81	4	2.03	7	3.55	5	2.53
	Afan Oromo as a medium of instruction for science subjects helps me to understand science better.	97	49.23	58	29.44	6	3.04	17	8.62	19	9.64
	Afan Oromo as a medium of instruction for science should continue beyond primary education	103	52.28	21	10.65	3	1.52	14	7.10	56	28.42
Science teachers	It is advisable to continue using Afan Oromo for teaching science subjects in grades 7 and 8.	4	100	-	-	-	-	-	-	-	-

**SA = Strongly agree, A = Agree, UD = Undecided, D = Disagree, SD = Strongly disagree
Quan = Quantity, that is, number of respondents.**

As can be seen from table 4.4 above, the majority of the respondent students consider Afan Oromo for grades 7 and 8 as “good”, as helpful for

understanding science and that it should serve as a medium for science subjects beyond the primary school level. However, quite a significant number of students also rejected the idea of carrying over Afan Oromo beyond the primary school level. The reason given for the rejection is that it hampers their efforts to develop skills and competency in the English language.

One of the students forwarded an interesting point. He said that those who design the policy do not have interest in sending their children to schools where Afan Oromo is used as a medium; they rather prefer to teach their children in schools where the medium is a foreign language. Responding to the allegation requires a special inquiry which is beyond the scope of the present study. As we have seen in table 4.4, however, the majority of the respondents expressed a positive attitude toward learning in Afan Oromo.

As to teachers, all those who filled in the questionnaires favor Afan Oromo to continue serving as a medium for science subjects in grades 7 and 8. They said that using Afan Oromo would help students to understand science better and to increase their confidence. In addition, they commented that in using Afan Oromo teachers can easily transmit knowledge who would otherwise be grappling with English. Therefore, it is not only students who support using Afan Oromo for science subjects but also teachers.

4.5.2 Attitude of secondary school students

Here, the attempt is to examine the attitude of secondary school students who learned science subjects in Afan Oromo in grades 7 and 8 but switched

to English in grades 9 and 10. Their responses to the relevant questions in the questionnaire are presented in table 4.5 below.

Table 4.5 Attitudes of Grades 9 and 10 students

Items	Response	
	Quantity	%
Do you think your science education in grades 7 and 8 in Afan Oromo has impact on your present performance in science subjects?		
a) Yes	75	75.75
b) No	24	24.24
If your response to the above question is ‘Yes’, what is the nature of the impact?		
a) Positive	44	58.66
b) Negative	31	41.33

As can be seen in the table above, the majority of the respondents—grade 9 and 10 students— said that using Afan Oromo for science subjects in grades 7 and 8 has a positive impact on their secondary school science education. However, a significant number of the respondents also said that it has a negative impact on their current science achievements.

The respondents who said that the mother tongue background education has an impact on their current science achievements were also asked to indicate the reason(s) for the impact. Those who indicated a positive impact identified the following reasons:

- Since the secondary school science education is almost the review of the grade 7 and 8 science there is no difficulty in understanding concepts.

- Learning science subjects through Afan Oromo at the primary school is a motivation to proceed to the secondary school science education.

On the other hand, those who indicated that using Afan Oromo at the primary school level has a negative impact on their current achievements gave the following reason:

- Due to inadequate exposure to English in the earlier grades, it has become difficult to cope up with English as a medium for science subjects.

4.5.3 Attitudes of primary school directors and education officials

The directors of the two selected primary schools are of the opinion that using Afan Oromo as a medium of instruction for science subjects is advantageous. They said that using Afan Oromo as a medium of instruction helps the students to easily understand and internalize lessons and gives them confidence to express ideas and participate in discussions. The education officials also responded positively toward using Afan Oromo for science subjects at the primary school level. The reasons they gave are: it increase enrollment, reduces failure, and decreases the dropout rate.

What we have examined in the preceding section is the attitudes toward the use of Afan Oromo as a medium in grades 7 and 8. Next, we shall investigate the issue of language choice.

4.6 Language choice of students and teachers

Both students and teachers were asked to indicate their language preference. The analyses of those responses related to language choice are presented below.

4.6.1 Language choice of students

Grade 7, 8, 9, and 10 students were asked to identify the language they consider appropriate for science subjects in grades 7 and 8. They were thus asked to choose from three languages. The summary of their responses is given below.

Table 4.6 Language choice of grades 7, 8,9,10 students

Respondents	Items	Afan Oromo		Amharic		English	
		Quantity	%	Quantity	%	Quantity	%
Grades 7 & 8 students	If you were given the chance, which language would you prefer for science subjects in your grade?	87	44.16	6	3.04	104	52.79
Grades 9 & 10 students	Which language is appropriate for science subjects in grade 7 and 8?	52	52.52	NA	NA	47	47.47

NA = Not applicable

According to the illustration above, the majority of grades 7 and 8 students, prefer English for learning science subjects while Afan Oromo comes second and Amharic, third on the preference scale. This shows that the majority of the primary school students in the sample schools have interest to learn science subjects in English than in Afan Oromo. On the contrary, the majority of the secondary school students prefer Afan Oromo as appropriate for science subjects in grades 7 and 8. The rest of the secondary school

students, who are numerically close to the majority, indicated the appropriateness of English. From the secondary school students, no one showed preference to Amharic as a language of learning.

The students were also asked to state the reasons for their responses. Accordingly, the most commonly listed reasons by those who opted for Afan Oromo are:

- As a mother tongue, it makes understanding science subjects easy.
- It creates employment opportunities in Oromia.
- Developing the language by using it for education is a responsibility.

On the other hand, those who chose English as a medium of instruction for science subjects gave the following reasons:

- Learning science subjects in Afan Oromo in grades 7 and 8 has negative impact on English proficiency which required for the secondary and higher education.
- Proficiency in English creates opportunities for employment in international organizations.
- Using Afan Oromo as a medium of instruction limits the possibility to learn in *Finfinnee* (Addis Ababa) and any other region than Oromia.
- It hampers the chance of communicating with others in the wider world.

The students who favor English suggest that either education beyond primary school level should be in Afan Oromo, or English should be the

medium from grades 7 and 8 onwards. They also fear that incompetence in the English language may restrict them to Oromia and their enthusiasm to work and live in the developed countries would be blocked. However, according to theoretical and pragmatic finding the former is close to reality.

4.6.2 Language choice of teachers

In this category of respondents all are science teachers of grades 7 and 8. The following are the responses they gave to the questions presented to them.

Table 4.7 Language choice of teachers

Respondents	Items	Yes		No		Advantageous		disadvantageous	
		No.	%	No.	%	No.	%	No.	%
Science teachers	Does using Afan Oromo as a medium of instruction for science subjects help students' performance?	4	100	-	-	NA	NA	NA	NA
	What do you personally think about using Afan Oromo for teaching science subjects?	NA	NA	NA	NA	4	100	-	-

NA = Not applicable

In the table above, all the teachers are in favor of Afan Oromo as a medium for science subjects in grades 7 and 8. As regards reasons for their responses, they stated the following:

- Using Afan Oromo as a medium of instruction for science subjects helps the students to understand the subjects.

- There can be no barrier of communication between teachers and students and, in fact, students can actively participate in discussions.
- Teachers will have no difficulty in transmitting knowledge to students.
- The situation helps to adapt scientific terms to Afan Oromo and that actually promotes the development of the language.

4.7 Availability of textbooks and other teaching materials

To provide effective and quality education the provision of textbooks and other teaching materials are mandatory. For instance, Aggarwal (1996:128) says that textbooks substitute for gaps in teachers' knowledge and skills.

Thus, in this paper an attempt is made to figure out the status of the provision of textbooks for teaching science subjects in Afan Oromo in the schools the study focuses on. If textbooks are inadequate the implication is that the effectiveness of the teaching-learning processes are also negatively affected. Hence, the students and the teachers of the selected schools were asked whether there is shortage of textbooks or not for science subjects in grades 7 and 8. The directors were also asked concerning the availability of textbooks and their responses are presented in the table below.

Table 4.8 Responses regarding the availability of textbooks

Items	Respondents	Yes		No	
		Quantity	%	Quantity	%
Do you have shortage of textbooks in Afan Oromo for science subjects?	Biftu students	18	18.55	79	81.44
	Adventist students	80	82.47	20	20.61
Does each student have a copy of the textbook for the science subject(s) you are teaching?	Science teachers	1	25	3	75

Responses regarding the availability of science textbooks vary significantly and show that there is more shortage in the Adventist primary school than in the Biftu Ghimbi Primary School.

In an interview, the Adventist Primary School director stated that there is partiality from the education office in the distribution of textbooks. The director of Biftu Ghimbi Primary School also indicated about the shortage of books for science subjects. But for him the shortage essentially concerns additional library materials in Afan Oromo. The education officials on their part denied the existence of shortage of textbooks but admitted that there is lack of reference books in Afan Oromo.

4.8 Teachers' and students' opinion on appropriateness of textbooks

In addition to the availability of textbooks, an attempt has been made to find out about the appropriateness of the textbooks. The following table presents the views of the teachers and students regarding the quality of textbooks.

Table 4.9 Response regarding the appropriateness of textbooks

Items	Respondents		Percents
	Teachers	Students	
Do you think scientific terms have been properly translated into Afan Oromo? a) Yes b) No	2 2	NA NA	50 50
The translation of scientific terms in Afan Oromo is satisfactory. • SA • A • UD • D • SA	2 1 1	NA	50 25 25 -
The science textbooks in Afan Oromo are good. • SA • A • UD • D • SA	NA	80 39 14 29 35	40.60 19.79 7.10 14.72 17.76

SA =Strongly agree, A =Agree, UD = Undecided, D= Disagree, SD =Strongly disagree

According to the table above, half of the teachers are positive about the translation of the textbooks. The majority of the students also strongly support that the textbooks are good.

To find out about the quality of the textbooks, the researcher attempted to evaluate them. Accordingly, grade 7 Chemistry and Physics and grade 8 Biology and Chemistry were assessed. Special attention was given to organization, exercises, and terms. Thus the textbooks were generally found to be with no significant problems except for the dubious translation of some terms and the lack of glossaries.

4.9. Opinions on the capability of science teachers

To find out about the capability of teachers in teaching science subjects in Afan Oromo, the secondary school students were asked through questionnaires while the primary school directors and education officials were interviewed. The reason for asking the secondary school students about the science teachers is the assumption that they are matured enough to provide relatively objective information.

4.9.1 Directors and officials opinion regarding teachers' capability

According to the directors of the two primary schools and the education officials, the teachers do meet the qualification criteria set by the Ministry of Education but in practice they are by far below their qualification on paper. The respondents said that unless the capability of the teachers is improved, the quality of education in the country will be undoubtedly worsened.

The respondents consider that the private colleges without proper supervision are the major cause for the worrying quality of teachers. Ineffectiveness of Teachers Training colleges is also the other factor that affects quality of teachers. As they stated, the training provided by both private and public colleges would not be adequate enough to equip their trainees properly. They, thus, emphasized the need for close supervision of the colleges so that they can play a positive role in producing qualified teachers.

It was learnt that there is shortage of qualified teachers for science subjects in Afan Oromo. Most of all, the problem of quality rather than quantity was singled out as worrying.

4.9.2 Secondary students' opinion regarding teachers' capability

Secondary school students, particularly those of grades 9 and 10 also share the preceding views of the directors and officials regarding the quality of grades 7 and 8 science teachers. In the questionnaire, the students were asked to mention the competency of science teachers to teach science subjects in grades 7 and 8 and what problems they faced while learning science in grades 7 and 8 as well as the nature of the problems. As regards problems, they responded as in the following table.

Table 4.10 Secondary students on problems in grades 7 and 8

Items	Responses			
	Yes	%	No	%
Is there any problem that you faced while you were learning science subjects in Afan Oromo in grades 7 and 8?	57	57.58	42	42.42

As shown in table 4.10, the majority of the students responded that they faced problems while they were learning science subjects in Afan Oromo in grades 7 and 8. As to the nature of the problems, lack of qualified teachers, shortage of textbooks, and lack of practical work in the classroom were identified. Out of these problems lack of qualified teachers is ranked as the top most problem (For details, see on Appendix C).

In an attempt to identify the cause of the inadequacy of teachers, the secondary students held the criteria for recruiting teachers as the culprit. According to the students, the criterion set for recruiting teachers is the main problem. Sometimes teachers were recruited without clearly stated criteria. Thus, the students strongly recommended that if the government wants to

provide quality education, teachers must be selected and promoted based on clearly set criteria.

4.10 Laboratory work

The current educational policy condemned the former system especially for lack of practical exercise and incapability of solving the country’s problems. Regarding the former reality, (ETPI: 11) states, “Due to shortage of laboratory apparatus in the former system teachers are forced to explain every scientific theory and concepts through presentation and note giving.” However, the reality in Ghimbi reveals that there is no practical activities in the current educational system too. In Ghimbi, no school has a science laboratory.

The following table testifies to the preceding generalization although very few respondents somehow contradicted the reality.

Table 4.11 Response regarding utilization of laboratory

Respondents	Items	No.	%
Grades 7 and 8 students	Do you use a science laboratory?		
	a) Yes	9	4.56
	b) No	188	95.43

4.11 Classroom observation

In order to support the data gathered through questionnaires and interviews classrooms observations were conducted by the researcher. Thus, the

researcher observed twice the delivery of lessons of each subject in each grade of the two primary schools.

In most cases, the teachers started with points from the previous lesson and moved on to a new presentation. The students were mostly passive except for few who were asking questions. Generally, classes were found to be conducted in such a fashion that teachers give lectures and write on the blackboard while students engage in note taking. The researcher has not witnessed any practical work or demonstration done for the science subjects in any of the schools.

CHAPTER FIVE

5. Summary, conclusions, and recommendations

The thesis, as presented in the preceding four chapters, is structured around the objective of finding out the effect of a mother tongue, in this case Afan Oromo, on student achievement. The summary of the contents of the thesis, conclusions, recommendations, and pointers to further research are given below.

5.1 Summary

The main purpose of this study, as pointed out in the preceding chapters, is to investigate the effect of using Afan Oromo on the achievements of students in science subjects in grades 7 and 8. The research was conducted in Ghimbi town, West Wollega Zone of the Oromia region. A total of 296 students from two primary schools and one high school, 4 science teachers, 3 education officials, and 2 directors and one assistant director were included in the study. The instruments used in the study were examining score records, using questionnaires, conducting interviews, evaluating textbooks, and observing classroom activities.

Key and leading questions which were entertained in the course of the study are the following:

1. Has Afan Oromo, as a medium of teaching and learning, caused difference in student achievement in science subjects in grades 7 and 8?
2. Does the use of Afan Oromo as a medium of learning in grades 7 and 8 affect student achievement at the secondary school level?

3. What is the attitude of students, teachers, directors, and education officials toward using Afan Oromo as a medium of teaching and learning?
4. Are there sufficient and competent human and material resources for the implementation of Afan Oromo as a medium of teaching and learning?
5. What are the possible measures to be taken to solve the problems encountered?

5.2 Conclusions

On the basis of the analysis of the data gathered through different instruments for evaluating the effect of Afan Oromo on student achievement in science subjects in grades 7 and 8, the major findings of the study are presented below by way of conclusions of the thesis.

- a. In grades 7 and 8 student achievement in science subjects with English as a medium are almost the same as those with Afan Oromo as a medium.
- b. In grades 9 and 10 too, it is almost the same except little variation observed across the subjects—Biology, Chemistry, and Physics. Generally, no significant advantage or disadvantage has been observed in relation to the use of Afan Oromo or English.
- c. Both the students and the teachers have positive attitudes toward using Afan Oromo as a medium of teaching and learning.

- d. The study reveals that supply and demand of textbooks and other teaching materials for science subjects in grades 7 and 8 is not balanced.
- e. The science textbooks for grades 7 and 8 do not have significant problems. However, the translation of some scientific terms needs to be reconsidered and it would be advisable to append a glossary to each type of the textbooks.
- f. Although the curriculum vitae of the science teachers are up to the standard set, the reality is that they essentially lack the required quality. Incapability of the teachers has resulted from lack of adequate training at the teachers training colleges.
- g. Due to inadequacy of pedagogical facilities, the use of Afan Oromo as a medium of learning has brought no significant differences on student achievement.
- h. Generally, the students of grades 7 and 8 do welcome the use of Afan Oromo as a medium for science subjects. However, a significant number of students show worry about their low competences in English in view of the importance of the latter at the secondary school level and for future opportunities.

5.3 Recommendations

Taking the findings of the thesis into account, the researcher would like to make the following recommendations.

- i. In order to make the use of Afan Oromo as a medium of instruction for science subjects in grades 7 and 8 effective, an effort has to be made in improving the provision of textbooks, laboratory materials and capability of teachers.

- ii. To improve English competency of students, English teaching method should be changed and competent teachers who have good command of the language should be assigned at primary schools.
- iii. There is pressing need of textbooks and other supplementary materials in Afan Oromo for science subjects in grades 7 and 8; hence their preparation should be encouraged.
- iv. The translation of technical terms and the revision as well as production of textbooks must be conducted on a continuous basis.
- v. Private and public teachers training colleges should revise their curriculum in order to provide adequate training for their trainees. The colleges should also be closely monitored so that they can positively contribute to the efforts of manpower development.

5.4 Further research

It has been repeatedly indicated that the chief aim of the present study is to assess the existing situations and point out the effect of Afan Oromo on student achievement in science subjects in grades 7 and 8 of Ghimbi schools. There are yet important aspects of the preceding objective and related issues awaiting research. Hence, the following points are forwarded for consideration.

- 1) What are the factors that affect the teaching and learning of science subjects other than the language of instruction?
- 2) How can the English competency of secondary school students be improved?

- 3) What are the effects of Afan Oromo as a medium of educational background on student achievement at the tertiary level?
- 4) What are the remedial measures to improve the quality of education at the primary, secondary, and tertiary level?

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A Questionnaire for Students of Grades 7 and 8
on using Afan Oromo as a Medium of Instruction for Science Subjects

This questionnaire is designed by a graduate student of linguistics to assess the effect of using Afan Oromo as a medium of instruction for science subjects at the second cycle primary schools, particularly in grades seven and eight of Ghimbi schools. It is administered to collect first-hand information about the topic under investigation. You are, therefore, kindly requested to respond to the questions in the questionnaire. The success of the study directly depends upon your genuine responses to the questions.

Directions: Please do not write your name in any part of the questionnaire. Regarding the items that require open answers, feel free to express and write your responses in the space provided.

Personal information

1. Age _____
2. Sex Male Female
3. Grade _____
4. Mother tongue _____
5. Name of the school _____

Part I. Circle one of the options that you feel is correct for each of the following questions.

1. Do you have any problems with the science subjects?
a) Yes b) No
2. If your response to Question 1 is 'Yes', please indicate the problem(s)?

3. Do you think using Afan Oromo for science subjects is problematic?
a) Yes b) No
4. If your response to Question 3 is 'Yes', what are the effects?

5. If you were given the chance, which language would you choose to learn science subjects in your grade?

- a) Afan Oromo b) Amharic c) English
6. State the reason(s) for your response to Question 5.
-

7. Do you have a shortage of textbooks in Afan Oromo for science subjects?
 a) Yes b) No
8. If your answer to Question 7 is ‘Yes’, how do you rate the textbooks?
-

9. Do you use a science laboratory?
 a) Yes b) No
10. How do you compare your performance in science subjects with those of the other subjects?
 a) better b) same c) less
11. Give reason(s) to the answer you chose for question 10?
-

Part II. Please indicate the degree of your agreement by putting “X” under SA, A, U, D, SD.

Note: - SA=Strongly agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly disagree

No	Statement of opinion	SA	A	U	DA	SD
12	Using Afan Oromo as a medium of instruction for science at my grade level is good.					
13	Using Afan Oromo as a medium of instruction helps me to understand science better.					
14	The science textbooks in Afan Oromo are good.					
15	English should be better option for science subjects					
16	Using Afan Oromo as a medium of instruction should continue beyond primary education					

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A Questionnaire for Science Teachers
on Afan Oromo as a Medium of instruction for Science Subjects

This questionnaire is designed by a graduate student of linguistics to assess the effect of Afan Oromo as a medium of instruction (MOI) for science subjects at the second cycle primary schools, particularly in grades seven and eight of Ghimbi schools. It is administered to collect first-hand information about the topic under investigation. You are, therefore, kindly requested to respond to the questions in the questionnaire. The success of the study directly depends upon your genuine responses to the questions.

Directions: - Please do not write your name in any part of the questionnaire. Regarding items that require open answers, feel free to express and write your responses in the space provided.

Personal information

1. Age_____
2. Sex Male Female
3. Year of service_____
4. Mother Tongue_____
5. Academic qualification_____
6. Field of study_____
7. The Science subject/s you teach_____
8. School name_____
9. The grade(s) at which you are teaching_____

Part I Circle one of the options that you feel is correct for each of the following questions.

1. Are you trained to teach in Afan Oromo?
a) Yes b) No
2. If your answer for question 1 is 'Yes', please indicate the duration of the training?

3. Does using Afan Oromo as a medium of instruction for science subjects help students' performance?

- a) Yes b) No

4. What is the reason for your answer to Question 3?

5. Do you use only Afan Oromo while you teach a science subject?

- a) Yes b) No

6. If your answer to question 6 is 'No', a) what other language(s) do you use? (b) Why do you use additional language(s)?

a) _____

b) _____

7. What do you personally think about using Afan Oromo for teaching science subjects?

- a) advantageous b) disadvantageous

8. What is your reason for your answer to Question 8?

9. Do you think scientific terms have been properly translated into Afan Oromo?

- a) Yes b) No

10. If your answer to Question 9 is 'No', what effect does it have on students' performance?

11. Does each student have a copy of the textbook for the science subject you are teaching?

- a) Yes b) No

12. If your answer to Question 11 is 'No', what is the existing situation in teaching-learning process?

Part II. Respond to the following questions freely.

13. What problem(s) have you encountered while teaching science subjects in Afan Oromo?

14. Is there any laboratory for the science subject(s) you are teaching?

15. How do you assess teaching science subject(s) in Afan Oromo?

16. Give reason(s) for your answer to Question 15?

Part III. Indicate the degree of your agreement by putting “X” under SA, A, U, D, SD.

Note: - SA=Strongly agree, A=Agree, U=Undecided, D=Disagree, SD=Strongly disagree

No.	Statement of opinion	SA	A	U	D	SD
17	I would prefer English as a medium of instruction for science subject in grades 7 and 8.					
18	The translations of scientific terms in Afan Oromo are satisfactory					
19	Students have no problems in understanding scientific terms in Afan Oromo.					
20	It is advisable to continue using Afan Oromo for teaching science subjects in grades 7 and 8.					
21	It is advisable to continue teaching science subjects beyond grades 7 and 8.					

**Addis Ababa University
Department of Linguistics and Philology**

**A Questionnaire for Students of Grades 9 and 10
on using Afan Oromo as a Medium of Instruction for Science Subjects**

This questionnaire is designed by a graduate student of linguistics to assess effect of using Afan Oromo as a medium of instruction for science subjects at the second cycle primary schools, particularly in grades seven and eight of Ghimbi schools. It is administered to collect first-hand information about the topic under investigation. You are, therefore, kindly requested to respond to the questions in the questionnaire. The success of the study directly depends upon your genuine responses to the questions.

- Directions:** - a) This questionnaire is for those students who had their grade 7 and 8 science education in Afan Oromo.
b) Please do not write your name in any part of the questionnaire.
c) For items that require open answers, please feel free to express and write your responses in the space provided.

Personal information

1. Age _____
2. Sex Male Female
3. Grade _____
4. Mother tongue _____
5. Name of the school _____

Part I. Circle one of the options that you feel is correct for each of the following questions

1. Do you think your science education in grades 7 and 8 in Afan Oromo has impact on your present performance in science subjects?
a) Yes b) No
 2. If your response to Question 1 is 'Yes', what is the nature of the impact?
a) Positive b) Negative
 3. Give reason for your response to Question 2.
-

4. Is there any problem that you faced while you were learning science subjects in Afan Oromo in grades 7 and 8?
a) Yes b) No
5. What is your reason for your answer to question 4?

6. In retrospect which language would have been appropriate for science subjects in grade 7 and 8?
a) Afan Oromo b) Amharic c) English
7. Up to what grade level should Afan Oromo serve as a medium of instruction and why? _____
8. How do you evaluate the competence of science teachers in teaching science subjects in grades 7 and 8?

9. What is your opinion about learning science subjects in English in your grade?

10. What action should be taken to make science education in Afan Oromo effective?

11. If you had faced problems while you were learning science subjects in Afan Oromo in grades 7 and 8 please rank the assumed problems that are listed below in the order of their seriousness by indicating 1st, 2nd, 3rd,
- a. Unknown new scientific words
 - b. Lack of reference material written in Afan Oromo
 - c. Lack of dictionaries in Afan Oromo
 - d. Lack of qualified teachers
 - e. Lack of textbooks
 - f. Lack of interests of student to learn in Afan Oromo
 - g. Lack of interests of teachers to teach in Afan Oromo

An interview guide for primary schools directors

1. Are there competent teachers who can carry out teaching science subjects in grades 7 and 8?
2. Is there any problem in teaching-learning science subjects in Afan Oromo in grades 7 and 8?
3. How do you evaluate the competence of your students in grades 7 and 8 in science subjects?
4. Are there adequate textbooks for teaching science subjects in grades 7 and 8?
5. What is the advantage of using Afan Oromo as a medium of instruction for science subjects in grades 7 and 8?
6. Is there any comment you may add with regard to using Afan Oromo as a medium of instruction for science subjects in grades 7 and 8?

An interview guide for a secondary school assistant director

1. How do you see the performance of your students in science subjects?
2. Do you think learning science subjects in Afan Oromo in grades 7 and 8 has impact on the students' current achievement?
3. What major problems do you observe with respect to the performance of those students who learned science subjects in grades 7 and 8 and in Afan Oromo and switched to English beyond that?
4. Is there any comment that you may add regarding the effect of using Afan Oromo on student achievement in grades 7 and 8.

An interview guide for education officials

1. Do the grades 7 and 8 teachers have the necessary qualifications?
2. What do you think is the gain in performance out of using Afan Oromo as a medium of instruction?
3. What are the pros and cons of using Afan Oromo as a medium of instruction for science subjects?
4. Do teachers participate in workshops, in-service training etc. to upgrade their knowledge and skills?
5. What improvement do you suggest which may help to improve performance of the students?
6. Are textbooks and other teaching materials sufficiently available for teaching science subjects in grades 7 and 8?

Yuniversitii Finfinnee
Damee Barnoota Seer-Lugaafi Filology
Afaan Oromoon Saayinsii Barachuurratti
Gaaffii Barattoota Kutaa 7 fi 8n Guutamu

Gaaffiileen kun Manneen barnootaa magalaa Gimbii, keessaahuu kutaa torbaffaafi saddettaffaa keessatti barnoota saayinsii Afaan Oromoon barachuun dandeettii barattootaarratti jijjiirama maalii fide is jedhu qorachuuf barataa digirii lammaffaa Yuniversitii Finfinneen kan qophaa'eedha. Gaaffichi abbootii dhimmaa dubbiin kallattiin isaan ilaalurraa odeeffannoo walitti qabuuf kan kaayyeffate waan ta'eef milkaa'inni bu'aa qorannichaa deebii isin gadifageenyaan xiinxaltanii laattanirratti hundaa'a.

Qajeelfama: Fuula kamirrattiyyuu maqaa keessan barreessuun hin barbaachisu. Gaaffilee yaada keessan gaafataniif waan isinitti dhaga'ame kennuurraa of hin qusatinaa

Personal information

1. Umrii_____
2. Saala Dhiira Dubartii
3. Afaan Dhalootaa_____
4. Sadarkaa barumsaa_____
5. Maqaa Mana barumsaa _____

Kutaa I. Filannoowwan kennaman keessaa kan sirriidha jettanii yaaddanitti maraa.

1. Saayinsii barachuurratti rakkoon isin mudate jira
a) Eeyyee b) Lakkii
2. Deebiin keessan gaaffii 1^{ffaa} "Eeyyee" yoo ta'e rakkoo maaltu isin mudate?

3. Kutaa 7 fi 8tti Afaan Oromoon saayinsii barachuun rakkoo qaba jettuu?
a) Eeyyee b) Lakkii
4. Deebiin keessan gaaffii 3^{ffaa} 'Eeyyee' dha yoo ta'e maali rakkoon isaa

5. Utuu filannoon isiniif dhihaatee afaanota asii gadii sadan keessaa kamiin barachuuf filatu?
a) Afaan Oromoo b) Afaan Amaaraa c) Afaan Ingilizii
6. Deebii keessan gaaffii 5^{ffaaf} sababiin maali?

7. Dareen keessan hanqina Kitaaba saayinsii ni qabaa?
a) Eeyyee b) Lakkii
8. Deebiin keessan gaaffii 7^{ffaa} 'Eeyyee,' dha yoo ta'e barataa meeqaaf kitaabni tokko kennama?

9. Kutaa amma barattan keessatti yeroo saayinsii barattan laaboraatooriitti ni gargaaramtuu?
a) Eeyyee b) Lakkii
10. Qabxiin gosa barnootaa saayinsiitti argattan qabxii keessan akaakuu barnootaa biroo wajjin yeroo wal biratti ilaaltan maal fakkaata?
a) ni caala b) wal qixweedha c) xiqqaadha
11. Deebii keessan gaaffii 10^{ffaaf} sababiin maali?

Kutaa II Haala waliigaltee keessanii sadarkaa waliigaltee ibsuuf kan kaa'aman 'BD', 'D', 'H', 'M', 'BM' jala mallattoo 'X' kaa'uun ibsaa.

Hunachiisa: BD=Baayyeen deggera, D=Nan deggera, H=Hin beeku, M=Nan Morma, BM=Baayyeen morma

Lak	Hima yaada ibsu	BD	D	H	M	BM
12	Kutaa koo ammaatti Afaan Oromoon saayinsii barachuun gaariidha					
13	Afaan Oromoon saayinsii barachuun koo barumsicha sirriitti akkan hubadhu na taasise					
14	Kitaabonni saayinsii kutaa keenyaa bifa sirriitti namaa galuun qophaa'e.					
15	Kutaa 7 fi 8tti saayinsii Afaan Ingiliziin barachuutu caala					
16	Kutaa 7 fi 8 boodallee Afaan Oromoon Saayinsii barsiisuun utuu itti fufee nan jaalladha					

Yuniversitii Finfinnee
Damee Barnoota Seer-Lugaafi Filoolojii
Afaan Oromoon Saayinsii Barsiisuurratti
Gaaffiilee Barsiisota Saayinsii Kutaa 7 fi 8n Guutamu

Gaaffileen kun Manneen barnootaa magalaa Gimbii, keessaahuu kutaa torbaffaafi saddettaffaa keessatti barnoota saayinsii Afaan Oromoon barachuun dandeettii barattootaarratti jijjiirama maalii fide is jedhu qorachuuf barataa digirii lammaffaa Yuniversitii Finfinneen kan qophaa'eedha. Gaaffichi abbootii dhimmaa dubbiin kallattiin isaan ilaalurraa odeeffannoo walitti qabuuf kan kaayyeffate waan ta'eef milkaa'inni bu'aa qorannichaa deebii isin gadifageenyaan xiinxaltanii laattanirratti hundaa'a.

Qajeelfama: Fuula kamirrattiyyuu maqaa keessan barreessuun hin barbaachisu. Gaaffilee yaada keessan gaafataniif waan isinitti dhaga'ame kennuurraa of hin qusatinaa

Odeeffannoo dhuunfaa

1. Umrii_____
2. Saala Dhiira Dubartii
3. Muuxannoo hojii_____
4. Afaan Dhalootaa_____
5. Sadarkaa barumsaa_____
6. Gosa barumsaa ittiin leenjitan_____
7. Gosa barumsaa barsiiftan_____
9. Mana barumsaa barsiiftan_____
10. Kutaa barsiiftan_____

Kutaa I. Filannoowwan kennaman keessaa kan sirriidha jettanii yaaddanitti maraa.

1. Afaan Oromoon barsiisuuf leenjitaniittuu?
a) Eeyyee b) Lakki
2. Deebii keessan gaaffii 1^{ffaa} ‘Eeyyee’ dha yoo ta’e ammamiif leenjitan?

3. Saayinsii Afaan Oromoon barachuun qabxii ijoolleef gaariidha jettuu?
a) Eeyyee b) Lakkii
4. Deebii keessan gaaffii 3^{ffaa} fi sababiin maali?

5. Yeroo saayinsii barsiiftan Afaanuma Oromoo qofaatti fayyadamtuu?
a) Eeyyee b) Lakkii
6. Deebii keessan gaaffii 5 Lakkii yoo ta’e, a) Afaan (Afaanota) biraa kamfaatti gargaaramtu? b) Maliif Afaan biraatti gargaaramtan?
a) _____
b) _____
7. Barnoota saayinsii Afaan Oromoon barsiisuu attamitti ilaaltu?
a) bu’a qabeessa b) bu’a qabeessa miti
8. Deebii keessan gaaffii 7^{ffaa} fi sababiin maali?

9. Jechoonni saayinsii sirriitti Afaan Oromootti jijjiiramaniiru jettuu?
a) Eeyyee b) Lakkii
10. Deebii keessan gaaffii 9^{ffaa} ‘Lakkii’ yoo ta’e firii barattootaarratti gedderumsa attamii qaba?

11. Barataan hundi kitaaba gosa saayinsii isin barsiiftanii ni qabuu
a) Eeyyee b) Lakkii

12. Deebiin keessan gaaffii 11^{ffaa} ‘Lakkii’ dha yoo ta’e, ammamtu kitaaba qaba ykn kitaabni tokko nama meeqaaf kennameef?

Kutaa II Gaaffilee asii gadiif waan isinitti dhaga’ame deebisaa?

13. Saayinsii Afaan Oromoon barsiisuu keessatti rakkoon isin mudate yoo jiraate maalfa’i

14. Gosa saayinsii barsiiftaniif laaboraatoorii qabduu?

15. Afaan Oromoon saayinsii barsiisuu attamitti ilaaltu?

16. Deebii keessan gaaffii 15niif sababiin maali?

Kutaa III Haala waliigaltee keessanii sadarkaa waliigaltee ibsuuf kan kaa'aman 'BD', 'D', 'H', 'M', 'BM' jala mallattoo 'X' kaa'uun ibsaa!

Hunachiisa: BD=Baayyeen deggera, D=Nan deggera, H=Hin beeku, M=Nan Morma, BM=Baayyeen morma

Lak.	Hima yaada ibsu	BD	D	H	M	BM
17	Utuu kutaa 7 fi 8tti saayinsiin Afaan Ingilizii barsiifamee nan jaalladha					
18	Jechooni saayinsii kutaa 7 fi 8 haala gaariin Afaan Oromootti hiikame					
19	Jechoota saayinsii afaan Ormoon hubachuurratti barattooni rakkoo hin qaban.					
20	Kutaa 7 fi 8tti Afaan Oromoon saayinsii barsiisuun itti fufuu qaba					
21	Kutaa 7 fi 8tti boodallee saayinsii Afaan Oromoon utuu barsiifamee nan jaalladha					

Yunivarsitii Finfinnee

Damee Barnoota Seer-Lugaafi Filoolojii

Afaan Oromoon Saayinsii Barachuurratti

Gaaffii barattoota kutaa 9 fi 10n guutamu

Gaaffiilee kun manneen barnootaa magalaa Gimbii, keessaahuu kutaa torbaffaafi saddettaffaa keessatti barnoota saayinsii Afaan Oromoon barachuun dandeettii barattootaarratti jijjiirama maalii fide is jedhu qorachuuf barataa digirii lammaffaa Yunivarsitii Finfinneen kan qophaa'eedha. Gaaffichi abbootii dhimmaa dubbiin kallattiin isaan ilaalurraa odeeffannoo walitti qabuuf kan kaayyeffate waan ta'eef milkaa'inni bu'aa qorannichaa deebii isin gadifageenyaan xiinxaltanii laattanirratti hundaa'a.

Qajeelfama: Fuula kamirrattiyyuu maqaa keessan barreessuun hin barbaachisu. Gaaffilee yaada keessan gaafataniif waan isinitti dhaga'ame kennuurraa of hin qusatinaa

1. Umrii_____
2. Saala Dhiira Dubartii
3. Afaan Dhalootaa_____
4. Sadarkaa barumsaa_____
5. Maqaa mana barumsaa _____

Kutaa I Filannoowwan kennaman keessaa kan sirriidha jettanii yaaddanitti maraa.

1. Kutaa 7 fi 8tti saayinsii Afaan Oromoon barachuun keessan qabxii saayinsii keessanii ammaarratti jijjiirama fide qaba jettanii yaadduu?
 - a) Eeyyee
 - b) Lakkii
2. Deebiin keessan gaaffii 1^{ffaa} 'Eeyyee' dha yoo ta'e jijjiirama attamii fide?

- a) Gaarii b) Gaarii miti

3. Deebii keessan gaaffii 2^{ffaa} fi sababiin maali?

4. Kutaa 7 fi 8tti yeroo saayinsii Afaan Oromoon barataa turtan rakkoon isin mudate ni jiraa?

- a) Eeyyee b) Lakkii

5. Deebiin keessan gaaffii 4^{ffaa} 'Eeyyee' dha yoo ta'e rakkoo maaliitu isin quunname?

6. Kutaa 7 fi 8tti afaan kamiin saayinsii utuu barataniif jaallattu?

- a) Afaan Oromoo b) Afaan Amaaraa c) Afaan Ingilizii

7. Afaanni Oromoo Afaan barnootaa ta'ee amma kutaa meeqaatti tajaajiluu qaba jettu, maaliif?

8. Kutaa keessan ammaatti Afaan Ingiliziin saayinsii barachuu keessaniif maaltu isinitti dhagaa'ama?

9. kutaa keessan ammaatti Afaan Ingiliziin saayinsii barachuu keessaniif maaltu isinitti dhaga'ama?

10. Barnoota Saayinsii kutaa 7 fi 8tii bu'a qabeessa taasisuuf maaltu ta'uu qaba jettu? _____

11. Kutaa 7 fi 8tti Afaan Oromoon saayinsii barachuu keessatti wantota akka rakkinaatti ka'an asii gadii akkaataa cimina rakkinoota kanneenii 1^{ffaa} 2^{ffaa} 3^{ffaa} jechuun sadarkaa itti kennaa

- a. Jechoonni saayinsii harawaan hin beekamne jiraachuusaanii
b. Hanqina kitaabota wabii Afaan Oromoon barreeffamanii

- c. Hanqina galmee jechoota Afaan Oromoo
- d. Hanqina barsiisota ga'umsa qabanii
- e. Hanqina kitaabaa
- f. Afaan Oromoon barachuuf fedhii dhabuu barattootaa
- g. Afaan Oromoon barsiisuuf fedhii dhabuu barsiisotaa

Gaaffiifi deebii qindeessitoota manneen barnootaa sadarkaa 1ffaa wajjin ta'e

1. kutaa 7 fi 8titti barnoota saayinsii geggeessuuf kan dandeessisan barsiisota ga'aa qabduu?
2. Kutaa 7 fi 8titti Afaan Oromoon saayinsii barsiisuu keessatti rakkoon isin mudate jira?
3. Dandeettii barattoota keessan kutaa 7 fi 8tii attamitti ilaaltu?
4. Meeshaalee barumsaaf gargaaran akka kitaabaafi kanneen biroo ga'aa qabduu?
5. Kutaa 7 fi 8titti Afaan Oromoo saayinsii barachuun bu'aa maalii qaba?
6. Kutaa 7 fi 8titti Afaan Oromoon saayinsii baruufi barsiisuu keessatti yaadi dabaltan biraan jiraa?

Gaaffiifi deebii qindeessaa mana barumsaa sadarkaa 2ffaa wajjin ta'e

1. Barnoota saayinsiirratti firiin barattoota keessanii maal fakkaata?
2. Kutaa 7 fi 8titti Afaan Oromoon saayinsii barachuu barattootaa firiisaanii kutaa 9 fi 10 irratti jijjiirama qaba jettuu?
3. Kutaa 7 fi 8titti Afaan Oromoon saayinsii barachuusaanii hordofee ga'umsa barattoota keessan ammaarratti rakkoon isin mudate maal?
4. Kutaa 7 fi 8titti Afaan Oromoon saayinsii barachuu barattootaa jijjiirama qabxii isaanii ammaarraatti fiderratti yaadi dabaltan ni jiraa?

Gaaffiifi deebii qondaaltota waajjira barnootaa wajjin ta'e

1. Barsiisota sadarkaa lffaa ammamtu ga'umsa sadarkaa sanaaf barbaachisu qaba?
2. Afaan Oromoo Afaan barumsaa ta'uusaan bu'aa argame attamitti ilaaltu?
3. Bu'aafi miidhaan Afaan Oromoon saayinsii barachuudhaa maal?
4. Barsiisonni ga'ummaasaanii fooyyeffachuuf leenjii adda addaatti ni argatuu?
5. Ga'ummaa barattootaa fooyyessuuf maaltu ta'uu qaba jettu?
6. Kutaa 7 fi 8titti meeshaaleen milkaa'ina sirna barumsaaf gargaaran kan akka kitaabotaafi barsiisota ga'aan ni jiru?

Appendix H

Students score records

Biftu Ghimbi Primary School sample student score records in English and Afan Oromo Medium

No.	Grade 7				Grade 8				National exam	
	General Science	Biology	Chemistry	Physics	General Science	Biology	Chemistry	Physics		
	1981	2000	2000	2000	1981	2000	2000	2000	1981	2000
1	93	72.5	44.5	40	45	58.5	26.5	26.5	35	48
2	48	42.5	42.5	40.5	29	63	48	48	32.5	47
3	71	41.5	52	51.5	30	68.5	53.5	63.5	34.38	55
4	59	43	63	61	37	60	44.5	44.5	35	59
5	58	48	51	37	27	66.5	66.5	66.5	37.92	47
6	61	50.5	92.5	81.5	35	68.5	42.5	42.5	42.08	50
7	70	53.5	55	62.5	62	76	61.5	61.5	41.67	48
8	62	51	33.5	38	27	80.5	83.5	83.5	39.58	46
9	68	57.5	80.5	89.5	45	75.5	80	80	37	53
10	85	57.5	64	54	38.5	83	62	62	27.50	54
11	58	66	39.5	38.5	23	52	54.5	54.5	30	54
12	50	72	59.5	46.5	32.5	64	44	44	34.17	43
13	36	44	40	40.5	37.5	44	33.5	33.5	42.08	47
14	61	50	56.5	50.5	33	73.5	72.5	72.5	47.50	42
15	59	44	67	67.5	29.5	58	16.5	16.5	34.17	49
16	61	41.5	46.5	38.5	38.5	63	44.5	44.5	33.75	54
17	51	47.5	85	86.5	35	63	50	50	38.75	59
18	62	36	48.5	40	43	56.5	40.5	40.5	37.90	38
19	58	58	46	38	34	49.5	40.5	40.5	63.33	47
20	58	31	41.5	38.5	33.5	57	41.5	41.5	29.58	54
21	45	36.5	47	36.5	63	61	54	54	36.25	49
22	51	48	52	37.5	72.5	74	72.5	72.5	39.58	47
23	63.5	37	61	46	38.5	65	50.5	50.5	49.58	48
24	41.5	34	46	37.5	58	51.5	38.5	38.5	30.42	49
25	48.5	36.5	51.5	55	30	56.5	55.5	55.5	36.25	55
26	37	56.5	56	50.5	33	57.5	42.5	42.5	44.58	41
27	38	55.5	58.5	57.5	36	82	81.5	74.5	37.92	55
28	50.5	56	47.5	36	40	53	41.5	50.5	30.83	44
29	54	50	48	38	40.5	43.5	54	54	28.33	42
30	52	44	50.5	30.5	30	50	38	44	42.97	50
31	49.5	50	45	43.5	34.5	54	44.5	49	33.75	49
32	52	47.5	47	45.5	34.5	43	47.5	65.5	42.92	45
33	51	56.5	61	47	49.5	44	26.5	48	40.83	49
34	59.5	40.5	46.5	36	24.5	39.5	52.5	48.5	35.53	52
35	58	41.5	57.5	42.5	15.5	56.5	37.5	54	54	77
36	53	54	71	54	13	59	52.5	56.5	81	51
37	58	77	74	78.5	32.5	62	42	51	35	48
38	53	41.5	46.5	42	21	46	36	36.5	42	54
39	74	83	43.5	35	36	51.5	50	54	54	50
40	46	65.5	42	42.5	25	54	38	48	43	44
41	49	50	43.5	39.5	27	50	39	55	48	46
42	62	70	52.5	56.5	27	56	27	54	51	46
43	51	53.5	38.5	33	26	51	35.5	50.5	66	50
44	58	40	60.5	60	17	52.5	36	46	31.67	48
45	59	47	38	36.5	33	61.5	31	64.5	36.25	42
46	60	41	47	37	42	39	27	35.5	40.8	40
47	47	52.5	53	47	7.5	74	54	52.5	32.50	46
48	42	78	41.5	32.5	27.5	60	25	47	39.5	59
49	63	49	42.5	36.5	22	50	54	53	41.2	58
50	64	89	51	44	29.5	50	46	53	41.67	52
Total	2819	2588.5	2628.5	2354.5	1701	2928	2336.5	2920	2021.19	2480
Average	56.38	50.47			34.02	54.56			40.42	49.60

Adventist Primary School sample student score records in English and Afan Oromo medium

No.	Grade 7				Grade 8				National exam	
	General Science	Biology	Chemistry	Physics	General Science	Biology	Chemistry	Physics		
	1981	2000	2000	2000	1981	2000	2000	2000	1981	2000
1	66	44	30.5	20.5	60	74	62.5	49	41	58
2	65	52	41.5	34.5	39	74	70.5	81.5	41	61
3	60	57.5	46	36	50	80.5	78.5	56.5	33	61
4	57	58	39.5	44	57	92.5	85.5	81	35	57
5	46	93.5	87	85	46	63	59	46	37	46
6	85	83	66.5	63	52	70	65	55.5	31.5	62
7	62	49	41.5	24.5	55	75.5	63.5	46.5	45.5	67
8	70	47	37	18.5	38	72	63.5	64.5	41.5	52
9	66	46.5	39	34.5	47	88.5	93	84	39.5	66
10	48	69	39	38.5	84	59	54	58	38	57
11	65	55.5	45	39	71	62	47	47	40	52
12	71	74	71.5	73.5	78	64	65.5	56	45	56
13	81	70	44	49.5	42	75	72.5	58	56.5	47
14	70	73	57	44	21	55	56	40	44	51
15	92	81	72.5	65.5	32	65.5	59	66	46.5	51
16	47	51	42	42	77	87	77.5	77.5	41.5	52
17	54	89.5	80	80	87	72	69	49.5	45	54
18	86	68	57.5	30	82	88.5	81.5	70	43	41
19	65	68	55.5	54	49	60.5	59.5	47.5	48.5	55
20	64	62	55	51	45	63	56	51.5	38.5	67
21	65	52	39.5	35	47	75.5	61.5	63.5	42	70
22	69	87.5	82	73	42	68.5	61	50	38	51
23	66	52.5	41.5	29.5	35	69	47	34.5	35	48
24	43.5	48	49	41	39	94.5	95	100	39	54
25	38.5	78	71.5	68.5	54	66.5	64	50	37.5	57
26	45	37	40	29	39	59.5	55	42.5	38	51
27	39.5	73	65	59.5	47	61.5	53.5	55	48.5	57
28	56	73	60	69.5	47	62.5	55.5	57.5	36	54
29	63	62	51.5	35.5	55	71.5	64.5	56	40	54
30	44	43.5	39	25.5	51	80	71.5	77.5	44	55
31	50	35	45	34.5	39	79.5	70	75	39	51
32	45	93	91.5	100	47	70	66	60.5	34.5	62
33	74	48	55	13	43	82.5	72	66	43.5	44
34	72	39.5	37.5	32.5	55	58.5	59	65	24.5	50
35	78	38.5	37	46.5	42	60.5	66	40	32	60
36	54	74	68	76	49	65.5	60	42.5	51	58
37	63	59.5	48.5	25	60	48	54.5	57	42.5	79
38	42	47.5	53	44	50	88	79	77	45.5	56
39	60	70	61.5	70.5	55	74.5	64	51.5	61	59
40	54	80.5	46.5	53	54	58.5	47	49.5	41	54
41	76	83.5	76.5	62.5	38	66.5	59.5	55.5	51	62
42	34	92.5	78.5	100	46	73.5	69.5	62	36	55
43	70	97.5	82	85.5	68	64.5	52	46	40.5	57
44	62	58	56	25	53	53	58	77.5	41	58
45	43	70	54	44.5	61	86.5	89	94	42	56
46	64	37	36	31.5	45	57.5	49.5	43	28	64
47	83	71	56.5	53.5	76	48.5	46.5	50.5	50.5	45
48	83	57	33.5	40	67	85.5	84	76.5	30.5	58
49	69	62	53.5	70	70	85.5	78	86.5	30	58
50	64	66.5	68	73.5	69	71	64.5	71	48.5	54
Total	3089.5	3178.5	2724.1	2479.5	2655	3528	3255	3018.5	2042	2804
		8382.1				9801.5				
Average	61.79	2794				3267.16			40.84	56.08
		55.8				65.34				

Secondary School sample student score records in English and Afan Oromo medium

No.	Grade 9						Grade 10					
	Biology		Chemistry		Physics		Biology		Chemistry		Physics	
	1981	2000	1981	2000	1981	2000	1981	2000	1981	2000	1981	2000
1	57	59.5	63	51.5	60	64.5	82	58.5	69	53	59	67
2	65	47	66	41.5	47	56	59	60	59	52.5	43	71.5
3	52	68.5	50	62	48	55.5	66	62	58	48	44	61
4	68	63.5	68	48.5	68	59.5	61	55	67	61.5	62	58
5	41	56	60	41	57	64.5	65	67.5	59	63.5	43	63.5
6	58	53	62	41	57	62.5	83	59	75	51	70	86
7	46	74	52	59	60	49.5	77	92	67	54	56	93
8	57	59	58	60.5	53	52	66	66	52	46	35	61.5
9	67	97	77	88.5	65	90	67	63	54	49.5	50	66
10	48	47	62	42.5	54	55	62	89.5	45	49	44	77.5
11	41.5	56.5	52.5	41.5	37.5	53.5	83	56.5	78	61	59	65
12	49	58	61.5	54.5	53	63	69	61.5	56	60.5	29	67.5
13	31	52	39	36	35.5	41	50	89	57	79.5	32	92.5
14	53	65.5	58	52	65	65.5	81	58	53	77	45	68
15	53	67.5	53	42	53	42.5	66	69	45	50	43	69.5
16	44	45.5	44	56.5	45.5	56	59	67	52	59	35	60.5
17	48	58.5	41	57	56	63	85	57	79	54.5	63	67
18	71	51.5	59	44.5	61	57	66	50	52	73.5	47	71
19	59	51.5	65	39.5	57	52	79	69.5	83	47.5	63	60
20	47	67	51	60.5	54	54	70	53.5	57	63	36	69.5
21	51	73	49	41	48	51.5	60	66	62	71	34	67
22	65	58	59	50	51	63.5	72	61	54	63.5	40	60
23	53	61.5	51	53.5	45	56	59	64.5	56	44.5	39	62.5
24	35	51.5	29	36	33	41	63	58	67	52.5	40	58
25	69	49.5	56	47	52	60.5	85	49.5	67	49.5	42	65.5
26	67	62	68	53.5	63	63	68	55	69	57	40	50
27	84	57	90	39.5	92	54	89	54	78	51.5	61	60.5
28	81.5	53.5	71.5	37.5	71.5	55.5	88	63	89	61	74	68
29	74.5	49	76.5	43	64.5	57	73	52.5	73	56	52	70
30	58.5	60.5	56.5	54	60	50	86	59	86	55	75	68.5
31	47	65	56	62.5	46	59	71	60	71	45.5	53	65.5
32	60	66.5	70	67	53	71.5	54	58	54	98.5	39	63.5
33	70	86	67	60	48	63	34	67.5	34	56	21	64
34	48	63.5	53	30.5	76	51	54	58	54	58.5	40	78.5
35	83	54	88.5	58.5	49	69	54	65	54	84	40	62
36	63.5	65.5	62.5	49	56	58	57	67	57	64.5	32	67.5
37	51	52	54	59	63	59.5	44	62.5	44	53	29	52.5
38	63	54	54	45	42	54	53	58	53	98	50	68.5
39	56	52.5	53	44	39	54.5	64	66	64	53.5	42	65.5
40	61	52.5	50	38	45	52	46	64	46	67.5	43	64.5
41	53	56.5	43	40	41	56.5	51	84.5	51	53.5	40	84.5
42	48	59.5	40	47.5	51	59	38	84	38	57.5	39	61
43	74	61	72	40.5	48	55.5	58	55.5	58	54.5	41	65.5
44	67	53	69	42.5	50	55.5	47	68	47	58.5	39	65
45	67	58	61	52.5	38	59.5	55	67.5	55	44.5	41	70.5
46	57	60.5	41	40	61	63	48	79.5	48	56.5	29	82
47	76	53	79	40.5	41	55.5	49	63.5	49	56	36	70.5
48	41	54.5	48	57.5	65	47	54	63.5	54	51	37	82
49	68	57	63	39.5	48	60.5	50	79.5	50	55.5	26	70.5
50	54	45.5	50	46	41	49.5	46	77	46	54	51	66
Total	2901.5	2943.5	2922.5	2435	2667.5	2861.5	3166	3234.5	2945	2935.5	2223	3324.5
Average	58.03	58.87	58.45	48.7	53.35	57.23	63.32	64.69	58.9	58.71	44.46	67.84