

**Female Students' Stream Choice in Preparatory School Vis-a-Vis
70:30 Ratio in Addis Ababa: The Case of Medhanialem Preparatory
School**

KASSAHUN DINGETU SHENGA

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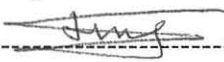


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School of Graduate Studies

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Signed by the Examining Committee:

Name	Signature	Date
Denebessa Dugna		05/07/12
Advisor Demu Zeyaw		05/07/12
External Examiner Teffaye Gebriet		July 5, 2012
Internal Examiner		

Chair of Department or Graduate Program Coordinator

ABSTRACT

Female Student' Stream Choice in Preparatory School Vis-a-Vis 70:30 Ratio in Addis

Ababa: The Case of Medhanialem Preparatory School

KASSAHUN DINGETU SHENGA

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The purpose of this study was to examine major factors that influence stream choice of female students in Medhanialem preparatory school in Addis Ababa. Mainly, it aimed to examine female students' stream choice in relation to 70:30 ratio. To achieve the objectives, data were collected from 278 female students (176 from natural science and the remaining 102 from social science stream), 48 teachers, two school principals and two guidance and counselors using questionnaires and interviews. The documents of students' enrollment across streams were collected from record office of the school under the study. The collected data through questionnaires and documents were analyzed in terms of percentage. The data collected through interview were analyzed through narration. The analysis revealed that, even though there was fluctuation, the total trend of female students' enrollment in natural science stream in six consecutive years is increasing and it seems in line with MOE (ESDP IV, 2010/11). The findings also showed that, female students' stream choice was influenced by individual interest, lack of guidance and counseling service, parental/guardian attitude, teachers' attitude and societal attitude. The effect of peers influence on female students' stream choice was not significant as the study showed. The result obtained also showed that female students were placed against their interest in natural science only to fulfill the requirement of 70:30 ratio. Hence, attention need to be paid to: a) individual interest of female students while placing in different streams (b) creating awareness on 70:30 ratio to increase their enrollment in natural science by their willing and organizing campaign and celebrities at lower grades which involve different stakeholders (c) improving overall contribution of guidance & counselors by aligning their plan with the school's developmental plan (d) motivating teachers by giving training and awarding those who better contribute and encourage females' education. (e) Organizing natural science club at all grade levels.

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CHAPTER ONE

1. Introduction

1.1 Background of the Study

The provision of education for the citizen is a key condition for economic development and growth for the whole world. According to Green (2007), education plays a great role in development of science and technology which contribute to the economic development of country. A well educated and disciplined citizen is important for any country's development. Sinha (2003) also noted that education concerns all spheres of human activity and every nation must be taken into account without disparity. It is used as a means of communication, maintains the structure of a given society and means of changing and even challenging the established values.

As Tilak cited in Green (2007), stated in Taiwan education was either the most or second most important determinant factor which affect income inequality of the society. In a similar way, in Kenya education is considered to be a key instrument for development and expected with the mission of producing skilled man power. For Kenyan government, no form of economic development is going to be possible without emphasizing and supporting education. It has been considered as most important to the development and seen as an asset to individuals' capital.

Education enables a society and each nation to struggle for the survival and sustainable development, encourages their participation in country's development in every aspect, strengthens problem solving capacity of every citizen at all levels of education in the

society. It also brings up nations who differentiate harmful practices from useful one and show positive attitude towards development and dissemination of science and technology. Women's access to education has been recognized as a fundamental right and women's education is among the educational goals of Ethiopia (ETP, 1994).

Education is the best investment for the people as it opens more opportunities to get a job which gives them satisfaction. Educated individuals benefit from and they can effectively contribute to the development of their society and their country at large. Every individual's education, particularly females' education and the promotion of gender equality in education are vital to development, and policies and actions that do not address gender disparities miss significant development opportunities.

Girls' education provides some of the highest returns of all development investments, yielding both private and social benefits that develop individuals, and society at large. There are several undeniable benefits associated with girls' education, which include the reduction of child and maternal mortality, improvement of child nutrition and health, lower fertility rates, enhancement of women's domestic role and their political participation, improvement of the economic productivity and growth, protection of girls from HIV/AIDS, abuse and exploitation (World Bank, 1995; p, 17).

The Development of a country is unlikely if all citizens have not equal opportunities to participate in every fields of study. Concerning this, Mishra (2005) revealed that different nations in the world have declared a commitment to equity in access to science and technology in order to promote countries' development. Moreover, a country that

has progressed in the field of science and technology is more developed than the one that has a poor science base.

Hence, in order to benefit from education and particularly from science and technology, the participation of both men and women with parity can contribute a lot to sustainable development of any society.

Schweitzer (2008) explained that science, engineering, technology and innovation are the bed rock for successful and sustainable development. In particular, the knowledge obtained from science education strengthens nation's socio economic development. However, developing countries face various challenges to development relative to developed countries. Thus, it is important to raise their living standards and create wealth by encouraging females' participation.

By increasing participation of women in science, the society can gain a lot from education which ultimately fosters economic development of a country. Thus, women have to involve in science if societies are to benefit from the forthcoming knowledge that women possess.

According to Steady (2006) educational systems have never been perfect and contribute to development as far as gender equality is not addressed. Despite this fact female students' participation in science and technology fields of study has been remarkably limited according to the study. Educational disparities between males and females at all levels of education are primary cause of females' underrepresentation in science.

Bart (2000) revealed that in America, women are underrepresented in science, technology, engineering, and mathematics fields of studies. Women are least enrolled in

science fields of study in high school through PhD. Furthermore, Bart explained that increased number of women in science brings reduction in gender bias in a given society.

Parker et al. (1995) revealed that one of the factors for underrepresentation of females in science streams of study lies not with females themselves, but rather with the nature of science and the perception of these discipline in school and society. The society categorizes science subjects for males and art field of study for female students.

Girls have been socialized to see social sciences or arts as more appropriate subjects for them to study, and science and technology as subjects reserved for boys. The streams offered to females are traditionally accepted 'feminine courses'. The imbalance and categorization in different streams of study is a result of combination of cultural factors, school factors and home factors. The cultural factors originated on societies specific beliefs of gender imbalance.

Even though both male and female students have the opportunity to be represented equally in every field of studies, gender gap still exists in secondary schools and higher education. Concerning this, as Hyde cited in Degefe (2008) revealed females do have different preferences from males in choosing different streams of study. They more likely enroll in arts, and social sciences, while natural science streams are least favored field of study for them. Boys outnumber girls in science courses at the secondary grade level.

Advice of parents influences students' choice of school subjects. As Okeke cited in Oriahi et al. (2010) revealed that parents have significant effect on students' choice of

subjects and career. If parents encourage young children into science, then students get opportunities to find out about different ways sciences can be used as interesting careers. However most of the students have not been helped by their parents when making their stream choices.

According to Mishra (2005) girls specializing in natural science streams tend to come from better educated parents. In most cases, females of educated families choose natural science stream of study. She also added that societal expectation, differential treatment from teachers and social pressure are among factors influencing females' stream choice. Mishra further explained that parents who are educated have positive attitude towards females' education and facilitate conducive environment for education relative to uneducated parents. Children of educated parents have a high level of satisfactions and face fewer problems than children of less educated parents or totally uneducated parents. Hence parents' education can contribute a lot to female students learning by giving direction at all educational level, particularly in secondary school grade level.

The Ethiopian Government Ministry of Education (ESDP IV, 2010/11) has endorsed a range of policies to work towards achieving gender equality. Accordingly, the government has declared a commitment in access to education particularly to science and technology streams in order to achieve long term vision of transforming Ethiopia into a middle income country by wide application of science, technology and innovation as instrument, by declaring the 70:30 ratio, where 70% of students enroll into science and technology fields of studies and the remaining 30% into social science streams in higher education institution. But, before implementation of 70:30 ratio, students would participate in any stream of their choice.

The participation of female students in natural science stream of study is an issue that needs investigation. Despite different measures have been taken to increase female students participation in science field, the problem still continued. In this regard, this study was conducted to make preliminary investigation on major factors that affect that female students' stream choice in Medhanialem preparatory schools in Addis Ababa.

1.2 Statement of the Problem

As Kaves and Kote cited in Degefe (2008) stated, there is no significant difference between male and female students achievement in science subjects at lower grade level. The disparity in achievement between male and female students in natural and social science subjects seems to increase as the level of education goes upwards. The study further explained that science courses become more for males in secondary schools where as social science for female students.

At the primary grade levels, all students study the same subjects so that girls' access to science is dependent on their rate of enrolment. However, at the secondary grade levels, particularly at preparatory grade, students are expected to choose between natural and social science subjects. Their choice at this grade consequently determines their further stream of study.

Lindsey (2011) noted that girls receive higher grades than boys throughout elementary and middle school in most subjects. But in high school, boys catch up and match exceed girls in overall grade subjects averages. At secondary school boys choose science stream subjects where as females prefer and achieve better in social science subjects.

Students need encouragement at each grade in science subjects regardless of their gender. As Koch cited in Sadker et al. (2007) particularly science stream subjects need encouragement and invitations. By explaining that science is truly for everyone with no gender disparity and creating awareness on those factors that limit females' participation, girls can participate freely in science and involve in scientific experience further.

The categorization of female students in a few fields of study also lessen their place of importance, in which they could be making decisions to change the way technology and science is designed and applied. Having women in scientific careers would not be simply a matter of better gender representation, but a matter of giving women access to positions where decisions positively affecting social and economic outcomes originate.

According to Ministry of Education (ESDP IV, 2010/11): in order to promote generation of scientists, to reduce poverty of the population and to prepare students as citizens who make decision about social issues and that actively involved in science and technology, the government has been implementing 70: 30 ratio which would be progressed from 58:42 in 2008/09 to 70:30 in 2014/15.

Female students are expected to participate in any stream in the same ratio as males, as they constitute half of the society. But there is a paradox: on one hand the government has set a policy that ensures gender equity. On the other hand, the 70:30 ratio seems to reduce the chance of a stream that is most preferred by females, since the ratio favors natural science stream. Implementing it, without addressing those factors that affect females' science stream choice, seems working against their choice.

Hence, to be successful and meet the target 70:30 ratio in 2014/15 and ensure gender equity across streams of studies; it is better to solve those factors that limit female students free stream choice. To improve females' participation in natural science at preparatory grade level, a clear understanding of variables that influence their choice including parental/guardian attitude, societal attitude, peer influence, individual interest, teachers' attitude, and guidance and counseling must be explored. To this end, this study attempted to identify those factors that contributed for underrepresentation of female students in natural science streams of study including the one set forth as presumed causes by different studies in choosing stream of study so as to bring out wholesome solutions for better participation of females in natural science streams of study in preparatory grade level in the school under study.

Even though similar studies had been taken in some regions in Ethiopia, as long as the knowledge of the researcher is concerned, no study has been conducted on preparatory schools in Addis Ababa. As far as the researcher is concerned, those researchers that conducted different studies on females stream choice did not properly address with respect to 70:30 ratio. Hence, this study appeared to be timely and important in identifying those factors that influence female students' stream choice at Medhanialem preparatory school in Addis Ababa.

Accordingly, the following guiding basic research questions are formulated:

1. What is the trend of female students' stream choice in natural and social science before and after the implementation of 70:30 ratio?
2. Did 70:30 negatively influence female students' freedom of stream choice to join science stream?

3. What other major factors influenced female students' stream choice?

1.3 Objectives of the Study

The aim of this study is to investigate factors that influenced stream choice of female students and its impact on their learning in Medhanialem preparatory school in Addis Ababa. In particular, the study tries to:

1. describe the trend of females students' stream choice with respect to 70:30 ratio, intake of natural science to social science ,
2. identify if 70:30 ratio influenced females' students choice of streams, and
3. asses other factors that influence female students' stream choice.

1.4 Significance of the Study

According to Education and Training Policy (ETP, 1994), at preparatory grade level, students are being prepared for higher education. Thus, at this grade level, it is aimed at preparing students for further grade levels or third cycle/universities and for the world of work.

It is at preparatory grade level that students, particularly females, choose their stream of study for their further field of study..

The findings of the study:

1. help to suggest means on how female participation in science streams will be increased.
2. recommend and suggest to preparatory schools, the government and other stakeholders by identifying those factors that affect females stream choice and enhance females participation in science in order to improve the situation.

3. help guidance & counselors by identifying factors that limit females free stream choice when consulting.
4. initiate experts and policy makers to use the result in implementing 70:30 ratio

1.5 Delimitation of the Study

The study has the following delimitation:

- There are different factors that influence female students' stream choice in preparatory school. Hence, it was difficult for the researcher to include all the factors in the study due to different reasons including time and financial constraints. Thus, the study concentrated on parental/guardian attitude, peer influence, individual interest, societal attitude, teachers' attitude, and lack of guidance and counseling variables.
- Despite the importance of more comprehensive information on the issue under the study, for the sake of manageable research, it is delimited to Medhanialem preparatory school. Thus, the findings of this study are delimited to Medhanialem preparatory school in Addis Ababa.
- The study is also delimited to grade 11, as it is a grade where students choose their further stream of study.

1.6 Limitation of the Study

Samples from parents and societies were not interviewed because of time constraints although they were taken as one of the major factors that influence female students' stream choice. Had sufficient time existed, the more detailed and exhaustive information would have been obtained to enrich the study and the more reliable the finding obtained.

The researcher used percentage to analyze the data, but it may lacks indicating the relationship between the variables in a better way.

It is difficult to generalize the finding of the study to a national level since it is conducted in one preparatory school. Standardized measurement tool of interest was not applied to measure individual interest of a student for a given steam of study.

The researcher faced critical shortage of time during the entire period of the study since he was full time worker. In spite of these limitations the researcher has made every possible effort to overcome the problem and completed the study successfully.

1.7 Definition of Terms

The researcher used the terms below in the following context:

Stream choice: preference of female students between natural science and social science.

Preparatory school: second cycle of secondary education in which students prepare for higher education.

Gender: refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women.

70:30: ratio intakes of natural science to Social science.

1.8 Organization of the study

The study is divided into five chapters. The first chapter is introduction, which encompasses; background of the study, statement of the problem, objective of the study, significance of the study, delimitation of the study, limitation of the study and, operational definition of terms. The second chapter deals with the review of related literature. The third chapter deals with methodology and procedures of the study. The

fourth chapter treats presentation, discussions, and interpretations of the collected data. The last chapter provides summary of the findings, conclusions, and recommendations.

CHAPTER TWO

2. Review of Related Literature

2.1 General Background

The role of education in the development of nations has long been recognized. Often, education is used as a means for achieving the social and economic development of individuals and nations. Investment in human capital through education would become a priority for governments to gather economic benefits for both individuals and society at large (Youssef, 2005).

As Manda cited in Green (2007) education improves the quality of labor force and increase income earning ability of individuals. It is widely seen as an investment in human capital as well educated people have more opportunities to get a job which gives them satisfaction. Education has been taken as a central to the development of nations in each case even though there are different factors associated with rapid economic development and no single reason can be considered as a sufficient cause. The effects of education to development would be fully realized if all citizens have equal right, access, and contribution in every field of studies.

Education transforms an individual to live a better life and more importantly in a social well being. Students must be equipped with knowledge and skills which are needed to participate effectively as member of society and contribute towards the development through education.

Lindsey (2011) revealed that “One of the greatest investment returns is to teach girls.” That is by providing education to females it is possible to decrease child death rate, drop infant mortality, delay marriage, and reduce poverty. In addition, children of an educated mother have a better chance of survival than the children living in the same place and same level of income of a mother who is illiterate.

The way men and women are defined in the society influences females’ role in science. Ethiopian Federal Ministry of Education (ESDP, 2010/11) revealed that the attitude of the society towards girls’ education is improving but the gender gap is still considerable at all levels of education.

One can easily notice that education is a key to women’s participation in science and technology. Hence, governments around the world have introduced mechanisms to promote and increase females’ participation in science education and incorporate different policies that allow women to play effective role in economic and social development of a country. Among these, the Fourth World Conference on Women by different governments, Beijing Declaration (1995, p.24) states that:

...Girls are often deprived of basic education in mathematics and science and technical training, which provide knowledge they could apply to improve their daily lives and enhance their employment opportunities. Advanced study in science and technology prepares women to take an active role in the technological and industrial development of their countries.... Technology is rapidly changing the world and has also affected the developing countries. It is essential that women not only

benefit from technology, but also participate in the process from the design to the application, monitoring and evaluation stages.

The development of a country depends upon the degree of access and opportunity of education to all nations without gender disparity in different fields of studies. The vital role of science education to development is acknowledged all over the world, by all nations, both developed and developing.

For instance, Schweitzer (2008) noted that in United States of America, in order to increase the living standard of the nation, science is considered extremely important to develop strategies for continuing growth and prosperity of the country. Due to this, women are increasingly majoring in science and engineering fields. In contrast, in many countries, discriminatory practices have limited participation of females in science and engineering fields of studies.

According to Parker et al. (1995) the roles of women have been changing throughout the world in the society in the present century. However in science, the engine for so many of the reform of the world, girls enrolment is limited and not changed to be accepted equally as men, particularly in secondary as well as higher educational levels. The masculinity of science is often the prime reason that girls tend to avoid this subject at school.

Science as a major driver of development provides an opportunity for women to positively influence the development process of a society. Steady (2006) suggested different factors; the image of different subjects as male domain and female, females' contribution, impact on the development and their enrollment in mathematics and science has been limited. The study further explained that the underdevelopment and

impoverishment of many African countries is the result of low participation and poor educational performance of females in science and technology fields of study.

The society gives less value to females' education and their ways of thinking to different school subjects. Cobern (1998) noted that science in school is taught as a process requiring logic and rational taught. On the other hand, society views women as not rational as well as less logical. Hence, females are discouraged by their society to enroll in science field. The study further indicated that unless the society is aware of these issues, gender disparity in science subjects cannot be changed easily.

The above studies indicate that, even though there is improvement of females' participation in education and science stream, the problem becomes worsen as one goes up the educational ladder. Throughout primary and middle secondary schooling, natural science subjects are compulsory for all students from different fields of subjects and they have the opportunity to participate in science subjects. However, as students move into the secondary school they are given an opportunity to choose between natural and social streams of studies but due to different factors, they are enforced to opt against their will.

2.2 Women and Education

Women form half of the population, half the school participant, half the college graduates, and half the consumers of technology, but they have little involvement in the forces that drive the changes which have such a great impact on their lives and societies development at large.

Women are underrepresented at all levels of education relative to men. Mozans (1991) revealed that women from the earliest times were considered as men's inferior and have been deprived of their right in education. As they are half of the society, educational opportunity should be provided at all levels to make sure the development of a country. Fewer females enter to educational programs and their enrollment is limited to traditionally 'feminine fields' such as secretary, art and social science.

According to International Organization for Science and Technology Education (IOSTE, 2006), among the reasons why girls don't choose science fields in addition to educational resources at school and within the society, teachers and parental attitudes play a great role in addressing the students confidence and interest in the field.

The persistence of gender gap in different fields of study is caused due to different factors. Even though there has been some progress in representation of women in the natural science streams, this process has been slow and unevenly distributed so that natural science field remains to be male dominated. Gender imbalance in different streams of study is more pronounced in secondary and higher educational levels (Chombe, 2005).

Different educational literatures and researches have been paid attention to the factors that hinders females' enrolment in science. They also provided and discussed different factors that limit females' participation and effectiveness in natural science stream of study in secondary schools. Since the constraining effect of different streams as males' and females' is challenged a country cannot benefit from equal participation of males and females in different streams of studies.

2.3 Policy Context

Policy frameworks for the enrolment of women in education can help in creating a supportive environment for females' enrollment in every field of studies. The primary concern of educational policy is to strengthen a just and equitable education and training system which is relevant and accessible to all nations irrespective of gender. Policies and national strategies help in fostering female's participation in science stream. A national science policy should clearly address gender equality aspects in every stream.

Internationally, nationally and regionally there is strong drive to reduce the gender gap in educational achievement and to encourage more girls to learn science subjects. The 2000 MDGs, MOE (2010) Education Sector Development Program (ESDP IV) and the Educational Training Policy (ETP,1994) have all put emphasis on gender equality in education by including specific gender equality in education together with specific gender goals in science and technology. In addition the UN Beijing plate form for Action (1995) recognizes the need for better access to and participation in technical and scientific fields at the secondary and tertiary level for girls and women.

On the other hand, there are countries which give emphasis to science education without any national science policy. For example although there is no clear statement of national science policy that has been formulated in Uganda, the government has repeatedly advocated the development of science and technology education as a basic economic and social development (Ajeyalemi, 1990).

The Ethiopian Government has been addressing gender issues in different policy arena. One of these policies is the commitment to improve educational access and equity to

accelerate the attainment of the Growth and Transformation Plan (GTP) and enhance science and technology fields of study at secondary and tertiary grade levels by increasing the gender parity.

Gender issue has received considerable attention by understanding its decisive role in nation's development. Despite enabling policy environment, a number of barriers continue to prevent females from enrolling in science stream at preparatory grade level equally to their male classmates. The prioritization of science and technology within the educational and development policies of the country invites all students without gender disparity and promote their participation in different fields. Before inviting female students to participate into science stream, those in and out of school factors that negatively influence their choice need to be well addressed.

Gender stereotyping in education, particularly in science, has received national attention. Individual and societal capacity can be build with education in science and technology. According to MDGs (2000) and MOE (2010), addressing gender parity in the education system, with a focus on improving girls' educational participation and outcomes at all grade levels, is crucial in meeting development goals and to enhance women participation in science streams of studies.

The transition from General Secondary, grades 9 to grade10, to the next level called preparatory; students must pass the Ethiopian General Secondary Education Certificate Examination (EGSECE). The exam helps to determine whether students enter the Preparatory stream or pursue a career in the Technical and Vocational Education and Training (TVET) track. Those who enter preparatory are given the opportunity to choose between two streams, natural science and social science (MOE, 2010).

To make more effective this program and educational policy at secondary school, preparatory schools prepare students for higher education intake of the 70:30 ratios in favor of science & technology. This policy applies and invites equally both male and female students without disparity as females constitute half of the society. Thus, it is more apparent that policy frameworks addressing the issue of gender equity as well as females' participation and success in preparatory school be in place.

Secondary school second cycle, preparatory grade level, helps to prepare students for the intake capacity of higher educational institutions. At this grade additional subjects that are prerequisite for area of specialization are included. These grade levels broaden the choice of streams that students can pursue further.

2.4 The Role of Science to Development

Science is not only useful but also necessary for development. Development is not possible without an applied science based technology. Individual and societal capacity cannot be built without a minimum education in science (Schweitzer 2008, p; 83).

According to Ethiopian Science and Technology Agency (ESTA, 2006) the application of science and technology began in Ethiopia with the establishment of higher learning institution. It is assumed to play role in bringing sustainable socioeconomic development of the country though it has not been as desired. Accordingly most socio economic problems of the country are mostly related with absence of well established scientific and technological based education to solve development and environmental problems.

In recognition of the vital role of science in national development, however, there is a need to encourage gender equality in the choice of science subjects in schools. Particularly, making use of the talents of women in science should no longer be looked at

only from the perspective of gender equality in education: governments should regard women's involvement in science as an essential component of country's development.

2.4.1 To the Nation

A country with an effective national development strategy will find ways to benefit from significant developments in science and technology. Schweitzer (2008) explained that science is one of the bases for successful economic development. The knowledge obtained from science forces the advancement of nations' socio economic development.

Schweitzer further explained that Science and technology strengthen and it is the base for the majority of Millennium Development Goals (MDGs). Several of the MDGs goals depend on scientific or technological attention to be met.

The MDGs are international standards for tracking human development. Their attainment will require reorientation of development policies and programs to focus on long-term sources of economic change and growth. This will need to explicitly take into account the role of science and technology in socio-economic transformation. Countries will need to design and implement policies as well as create institutional arrangements that promote the development and application of science and technology to solve specific problems around each of the goals.

According to Cobern (1998) science and mathematics have greater consequence than other instructional fields of education such as classical education, humanities or languages on development. Science shape societies' positive attitude towards modernization and prepare them for higher education and for sophisticated production role of the nation.

Society may not only promote but also hinder the advancement of science. Hence, raising the level and use of science within societies is a necessary condition for furthering the scientific and technological development and vice versa.

2.4.2. To Individuals

As part of education, science can play a great role throughout individual life. According to Reiss (1993) providing science to individual in school help both in school and when they leave the school in increasing their understanding of real life. Every individual should participate in science so that they can challenge any problem they face in a better way. In addition, science ensures that the next generation of scientists receives an appropriate science education.

Science is a major source for social and economic changes in current history of mankind. It has contributed much to make life comfortable. For the young individual citizen, the understanding and awareness are to be developed primarily through science education (Ajeyalemi, 1990).

2.5 Factors Affecting Females Stream Choice

Female students appropriate stream choice is crucial both to ensure that the country has the skills needed for the development and let females make their best choices to meet their future needs without any influence internal or external.

According to Usmani (2004), at secondary school, science education for girls has been neglected so far and education of women is considered not as much significant as education of men. As gender make up of students that influence their enrollment has been changing, natural science stream continues to be largely males dominated. Furthermore,

the much expected 50:50 ratio enrolment between males and females in science stream is still a challenge.

First in the family unit and subsequently in society, girls are still not viewed as having the same capability as boys, and science courses are not viewed as being part of their basic education. Therefore, girls are educated differently than boys and usually are not encouraged to pursue scientific and technical studies (UNESCO, 1999).

Everyone has to make choices at different stages in his/her life. Some of the most essential related to their education is the stream of study they decide to take for higher-level study. In Ethiopia they are likely to be asked to make selections of streams at preparatory grade level. Before the implementation of 70:30 ratio, students were expected to participate in any stream of their choice. Whereas, after implementation of 70:30 ratio, the enrollment of students in different fields of studies at preparatory grade level take it into consideration.

There are different factors that affect stream choice of females in secondary school. The effect of these factors becomes more visible in secondary educational level, particularly in preparatory grades. These factors include parental/guardian attitude, social influence, individual interest, peer factors, teachers' attitude, and guidance and counseling.

2.5.1 Individual Interest

All things being equal, it would be nice if people were able to study what they like and work at what gives them satisfaction. Similarly, students need to choose streams of studies according to their interest without influence of external enforcement in school and out of school factors to be successful in their further studies.

Individual interest is a major factor in educational stream choice and achievement. As Athanasius cited in Athanasius (2009) interest is important for learning and working. Moreover, individual interest continues to play a significant role in stream and career choice throughout individual student's life. There is little need to motivate a person who is interested in something.

According to Education, Audiovisual and Culture Executive Agency (2010), despite performing equally well in science achievement as boys in most countries, girls tend to have a weaker self-concept in science than males, i.e., on average, girls had lower levels of belief in their science abilities than boys. Yet, both boys and girls are similarly interested in science; and there is no overall difference in boys' and girls' inclination to involve in science in future studies. The study further indicated that reading, however, is considered important and by far more preferred by girls than boys in all European countries.

All human beings are free to develop their personal abilities and make free choices without the limitations set by stereotypes and gender roles at all level of education.

Both males and females generally enroll in similar subjects and show similar achievement in lower grades. Girls, particularly as they move out of elementary school, into middle and high school and beyond, often underestimate their abilities in science and their interest decrease. However, it is important to note that not all girls have less confidence and interest in science, and that girls, as well as boys, who have a strong self-concept regarding their abilities in science subjects are more likely to choose science (Halpern, 2007). The overall conclusion from this research is that females consistently under-

estimate their science subject skills regardless of what their skills really are and because of this they are less interested in science subjects.

Females interest in science subjects decrease as their educational level increases. Supporting this idea, Patricia (1990) explained that girls and boys do equally well in both mathematics and science subjects in elementary school. As they go to secondary school, the participation of female students in mathematics and science subjects begins by decreases in achievement and interest.

As Schiefele and Seymour cited in Beier et al. (2008) the choice of academic stream as a major field of study is affected by students' interest in the subjects under each stream. Whereas females' lack of interest in science related fields are most frequently cited reasons for not to choose science as their major field. Hence, improving girls' interest in different subjects can alter their choices and performance in different fields of study.

2.5.2 Parental/guardian attitude

Each child in a society has certain social positions given by the parents/guardian or the society; he/she is born into a particular family, in a particular place and environment and in a relative position with regard to being male or female.

Parental attitude related factors particularly their attitude to education is central for success of their children's education as it is parents who opened the door to education for the children. Different researchers revealed that the involvement of educated families and their attitude to children's education contributes at different stages of schooling.

As Willms cited in Asmamaw (2006) the involvement of parents is important for children's success throughout secondary school education. He explained the fact that active participation of families in their children's education declines as students' progress

from primary school to middle and secondary school grade level. Educated parents have positive attitude to children's learning and are more familiar with their children's school environment and support their learning.

Educated parents are more able to recognize long term benefit of education and thus provide their children with better education. They derive satisfaction more from their children's education. Better-educated parents make better-informed stream choices of their children.

Educational involvement and willingness of educated parents undoubtedly influence children's field choice. As ANBEET cited in Gudeta (2008) indicated, advices from educated parents increase students' confidence and make clear confusions in different subject areas. In addition, Parental education positively influences females' participation and attitude at any educational level. Educated parents easily understand their children's and give advice in educational pathways. On the other hand, illiterate parents do not provide a good academic environment to their children.

It is known that, preparatory grade level is a time of preparation to learn new roles and acquiring new facts in different streams. During this age conflicts may build up between demand of parents and their children. Uneducated parents fail to guide their children where as educated parents take the responsibility to shape them.

As it is explained by Hertz et al. (1991), if parents have educational background, they encourage their children's education more and provide supportive educational materials. In addition to that; they also challenge the traditional trend in the society that limits females' education and involvement in different fields of study. On the other hand, when parents lack education they might be more reluctant to challenge the tradition and educate

their children. Furthermore, for uneducated family, females' education seem distant to benefits from males' education. The more educated the parent, the greater is their involvement in their children's education accordingly.

Leuine and Havighurst (1992) also indicated that the influence of educated parents on children's education is more visible and students achieve better in a family where there is high verbal interaction. Educated family provides educational materials and show how their children could better perform in their education.

In general, educated parents provide their children with the academic and social support which is important for educational success when compared to parents who are less educated. Family provides foundations which enable the students to succeed successfully in their education.

2.5.3 Societal Attitude

Another factor for underrepresentation of females in science stream of study lies in the perception of this field of study in society. Everyone is in a position to be influenced by the society in which he/she is living. Thus, attitude of the society to females' education can play a great role in choice of different field of study. Societies' perception and attitude towards gender role and responsibilities have great impact on females' educational stream choice.

As Ettinger et al. cited in Helen (2010), many of the observed differences between male and females are the product of early experience of the society. But latter, this experience enforced and practiced by different parts of the society such as parents, teachers, and

school environment at large. Similarly, Allan (2007) indicated that gender inequality in any case is not natural or essential but the product of social relations.

Research findings have shown that the pattern of students' interaction inside and outside the classroom has significant effects on their interest and achievement in science as Fraser et al. cited in Oriahi et al. (2010). In terms of the classroom, by peer group, outside the classroom, is one of the factors that seem to affect students' interaction and it is the effect of social gender stratification. Wherever societies have existed, there has also existed some form of stratification among their members.

Ginsberg & Gasman (2007) explained that women do not get the same degree of opportunity of success as men in the society. This disparity between men and women students extends to school life, particularly at secondary grade level. Students themselves are the most influential agents who bring different aspect of social attitude on females to the classroom.

Schweitzer (2008) revealed that gender disparity in science and mathematics is not biological. The difference is more due to social factors of categorizing different roles to both males and female students. Society influences females to limit their life roles on the basis of their sex alone, without regard to their personal interest and individual capabilities. Yalew (1997) and Parker et al. (1995) described that males and females are expected to show behavioral characteristics that the society considered appropriate for their gender. Those, who violate these roles will be subjected to criticism by the society.

As Betz cited in Degefe (2008), most of the girls prefer nursing and elementary school teaching as their occupational choice. Boys are given much wider range of traditional male

occupations such as science, trade, and engineering. Girls do not choose male dominated fields due to fear of disapproval from the society. Social norms assign science and technology fields of study to male and female students to arts and social science. The attitude of the society towards stream preference is highly influential on females' choice of subjects. Mostly societies limit females to the home, family activities, and social science.

Society's negative attitude is one of the limiting factors that shall be changed to increase female students' participation in science stream of study. Males and females are treated differently in the society based on their sex. The experience of categorizing male and females as different affects female students' education as well as their enrolment in different streams.

2.5.4 Peer Influence

Besides the influence of family educational background and society's attitude towards females' science enrolment, peer group influence determine their academic stream choice. When children go to school, they meet more people of their age and peoples of different ages. Peers, their age mates, influence their choice since they spent more of their school life together.

According to Myer (2001) when girls go to school they encounter peers of similar age. At school, they are exposed to peers organized activities and evaluate themselves from their peers' perspectives. The relation with peers has pressure on students' personal stream preference and attitude towards education at school life.

Students can be influenced by their peers than they can be pressured by any other people. Thus peers have the opportunity to influence their friends life preference and academic stream choice of female students at secondary grade levels.

As Condry and Simon cited in Leuine and Havighurst (1992), when some students are neglected or families are unwilling to help them, they turn to their peers for any help in and out of school life. Their preference and decision making is not fully based on their own interest and ability but on the peers' enforcement. They further discussed that, the peer influence on student becomes more influential when the ages of the children increase.

On the other hand, among peers, male students can have negative influence on females' stream choice in school. Coats (1994) revealed that, even though girls achieve equal or exceed those of boys in early primary schools, they commonly drop in secondary school. Male peers discourage females' participation in science by considering science as males' subject. In addition, adolescent boys undermine girls' effort in science class suggesting that science to be males' domain.

As Kandle cited in Degefe (2008), compared to male students, females at school are more influenced by their peers. Though males also face peer influence in the same manner, they can easily challenge the influence and their enrollment in different stream choice is not affected as females.

This literature suggests that few students choose a particular stream merely because their friends have chosen it. However friends may help to form their general attitudes towards education, which in turn influence their choices. Peer can also be one of the factors that influence students' stream choice in secondary schools.

2.4.5 Teachers' Attitude

Another factor that can play role in female students stream choice is teachers attitude to females science education. The most critical person in school in charge of teaching-learning is a teacher. If we aspire to increase the enrollment of females in science streams, we must be concerned about how science is taught in school. Teachers have their due role in polishing and molding students' personality. Attention from teachers is an important issue in students' education.

According to Abbott (2010) in Rwanda, Secondary school girls are submissive in participating in class and team work especially in mixed sex schools; this limits their full participation in science lessons. Teachers in mixed sex schools interacted more with boys than girls. This interaction between teachers and boys let males dominate in the class and undermine girls' confidence. Teachers' acceptance of science's gender role stereotypes may influence their attitudes and practices in teaching. Generally, teachers' behaviors and practices reinforce the concept that science is an area in which boys successfully participate more than girls do.

As Barbara and Cardinal cited in Yeshimebet (1998), the level of questions asked to males and females show the reflection of teacher expectation to his/her student. Questions forwarded to females' are mainly of low level, and their interaction with teacher is not as good as boys. Moreover, females rarely respond to teachers questions.

Gender difference in the class room, subject choice, and academic achievement are traditionally accepted as part of school life. According to the success or failure of female students depends on the attitude and response of teachers in class. Girls do not participate

in the class discussion because they have been socialized to be shy and submissive (Brown, 1986).

Gender biased classroom practices have been shown to negatively impact the choice of females in different stream. Teachers giving more attention to male students during science instruction may unintentionally send the message that female students are less capable in these areas. Negative attitudes of teachers about science related fields that are driven by gender biased stereotypes may influence the number of females who pursue in science fields of study.

Teachers can support students in constructing their knowledge in a variety of ways. One of these is asking questions, responding to students' answers in order to help the student build his/her knowledge in different subjects. Researchers have shown that the gender disparity influence the classroom interaction between teachers and students. Boys ask and answer more questions, given more praise and time to answer questions, receive more teachers feed backs than girls get. Whereas when girls interact with teachers, the typical interaction involves discussions regarding their social activities than the content of the subject matter (as Brophy cited in Cobern 1998).

Teachers consider that female students have poor performance in science as compared to males. Students need to feel more comfortable, accepted and to be treated in class. Concerning this, Zeida (2008) revealed that words and actions of teachers significantly contribute to students' perception of academic capability. However, teachers give more attention to boys and girls are relatively neglected as different studies indicated. Unfortunately, most female students believe that teachers do not give recognition as male students.

According to Parker et al. (1993), teachers do not expect good result in science subject from female students. In evaluating students exercise and exams, their judgment is clouded by gender distorted expectations. They give little attention and treat questions raised by females negatively, as a result female student usually develop negative attitude towards science subjects.

According to Parker et al. (1995) the practice of teachers, male and female students in science classes shows that few females participate actively, while majority of the females do not participate to the same extent as males and are not offered the same level of opportunity by their teachers in addition.

2.4.6 Guidance and Counseling

Guidance and counseling help students in discovering their personality and capacity in various studies. It is obvious that students need information about fields of study when making stream choice at preparatory school. The absence of guidance and counseling service influences students' school enrollment and their academic stream choice.

According to Pandey (2008) guidance and counseling is an integral part of each school. It is developmental by design and includes sequential activities organized and implemented by certified professionals aimed to support teachers, administrators, students, and parents. The counselors support students and guide them so as to enable them focus on their school lesson.

The role of the guidance counselor is not limited to guiding and advising school students. School guidance and counselor can also assist students by advising their parents in areas that are critical to students in their school life. To effectively help female students in their

academic and particularly stream choice at preparatory grade levels, they need to understand what factors influence school their choices.

Students of all abilities can participate in science and counselors can challenge that this stream is only for men. Through counseling, students are facilitated to get support and basic information to choose appropriate stream. By doing so, guidance & counselors can solve different factors that affect students participation interacting with students and help them to choose appropriate stream of study.

During secondary school, at the period of adolescent age, pupils are transition period from child hood to maturity; students may encounter different challenges in their interest, social and emotional problems. By the help of guidance & counselors, schools should provide counseling services to students so that they can easily pass through these challenges (as UNESCO cited in Chombe, 2005).

Furthermore, a school guidance and counseling has a great role in influencing students' stream choice in preparatory grade level. They should support and encourage students' choice of science stream. In addition, female students should be given information regarding the structure and content of each stream subjects.

As Lapan cited in Degefe (2008) strong student and school friendship can be strengthened and positive climate can be constructed in school by implementing strong guidance and counseling service. Properly organized guidance and counseling corrects students in secondary schools.

To sum up, from the studies and review of papers discussed so far, there are a number of factors behind academic stream selection female students at preparatory grade levels that

influence their stream choice. These factors include: (1) individual interest of the student, where female students choose streams of studies according to their interest/choice without influence of external enforcement (2) family/guardian attitude, where parents/guardians provide continual educational support and free discussion that shape students' in their academics as well as stream choice; (3) the enforcement peers, their age mates influence on their choice since female students spent more of their school time, (4) the school environment, attitudes of teachers, guidance and counseling service providers, and (6) out of school factors such as society, and (6) societal attitude, perception and attitude of a given society towards gender role and responsibilities on females' students stream choice.

CHAPTER THREE

3. Research Design and Methodology

3.1 Research Design

The aim of this study is to examine the trend of female students' stream choice in preparatory school with respect to 70:30 ratio. To secure the required information descriptive research design was applied. The method is appropriate to explore the status of the problem using data collected from relatively large sample.

3.2 Sampling Design

The population of the study included natural and social science female students, teachers, and guidance & counselors from Medhanialem preparatory school.

The school was identified using purposive sampling because of its proximity to the researcher. Two school principals and two school guidance & counselors were included in the study by availability sampling. 48(30 %) teachers were also selected by applying stratified and systematic random sampling from 156 teachers from different departments. The total female population in this study was 926 female students, out of which 278 were selected by stratified and systematic random sampling from 29 sections (20 sections of natural and the remaining 9 sections of social science stream). The researcher included 30% of female student respondents from both natural and social science stream female students of grade 11 Medhanialem preparatory school by

systematic random sampling. The samples size was determined from the population by using sample determining table as Krejcie and Morgan cited in Cohen, et al. (2005, 94).

3.3 Tools for Data Collection

The researcher collected data using questionnaires and interview along with recording device and notebook.

3.3.1 Documents

Participation of female students in natural science and social science streams of studies from 1999 E.C to 2004 E.C was collected to observe their trend of stream preference in these years.

3.3.2 Questionnaires

Two sets of questionnaires were prepared to collect information from grade 11 female students and grade 11 preparatory school teachers. The questionnaires distributed to students has two parts participants characteristics, and the second part involves items related to stream choice covering areas including individual interest, guidance & counseling service, parents'/guardians' attitude, Societal Attitude, Influence of Peers, and teachers' attitude to choose a given stream, whereas teachers questionnaires has three parts namely teachers personal information, teachers view towards female students stream choice, and possible solution to alleviate the problem.

Pilot studies have been administered to a group of students and teachers to check the internal consistency and reliability of the items and some modifications were made on few items before the questionnaires were administered to the main respondents.

278 female respondents were selected as a sample from 926 total female students in grade 11. Both the distribution and collection of questionnaires were done by the investigator and one assistant data collector during class hours. On the part of student respondent since they were scattered in different sections, it was found more convenient to assemble them in groups. Students' questionnaires were administered in Amharic and latter translated to English.

3.3.3 Interview

A series of semi structured interview questionnaires were developed and ten female students, two school principals and two school guidance & counselors. The interview was conducted in Amharic and translated into English. Note book and voice recorder were used to record the information of the interviewee.

3.4 Methods of Data Analysis

Quantitative and qualitative data analyses were employed. The data collected by interview was analyzed qualitatively i.e. by narration. The data obtained during the study have been analyzed by applying percentage.

CHAPTER FOUR

4. Presentation, Discussion and Interpretation of Data

This chapter presents the results of the main study in terms of basic questions which the study has set out to test. The major objectives of the present study are to examine the trend of female students' stream choice, and major factors that affect their stream choice. The data collected was categorized into six parts. The analysis for each was presented along with the discussion and interpretation of the results.

The questionnaire was distributed to 278 female students of which 274 (173 from natural science and 101 from social science) respondents properly filled the questionnaire and returned (98.6%) of the paper. Among 48 teachers, 40 filled the questionnaire properly and the return rate is 83.33%.

Two school principals were interviewed, both have more than 15 years experience in administration at different schools. Regarding their qualification, one has a first degree and the other was second degree holder. Two school guidance & counselors were also interviewed on their contribution to students' stream choice. One of them was second degree holder and has 20 years of experience, and the other was first degree with three years of experience.

4.1 Student Respondents' Characteristics

Table 1: Female Student Respondents' Characteristics

Age	streams of study			
	Natural science		Social science	
	f	%	f	%
13-15	1	0.5	1	0.9
16-18	155	89.5	88	87
Above 18	17	10	12	12.1
Total	173	100	101	100

f= frequency

As shown in Table 1 above, in the age range of 16-18 years, there were 89.5% and 88% of natural science and social science students respectively. Only small proportion of female students lied in the age range of 13- 15 (0.5% in natural and 0.9 in social science). The remaining 10% and 12.1% student participants from natural and social science streams respectively were above18 years. In general, from the total female respondents, 89.7% were in the age range of 16-18 years.

4.2 Teacher Respondents' Characteristics

The general characteristics of teacher respondents from their responses are summarized in the Table 2 below.

Table 2: Teacher Respondents' Characteristics

Sex	Age (in years)								Qualification				Experience (in years)									
	20-29		30-39		40-49		50 & above		First degree		Second degree		1-5		6-10		11-15		16-20		Above 20	
	f	%	f	%	f	%	f	%	f	%	f	%	F	%	f	%	f	%	f	%	f	%
M	20	50	1	2.5	2	5	10	25	31	77.5	2	5	13	32.5	7	17.5	4	10	3	7.5	6	15
F	2	5	3	7.5	2	5	-	-	7	17.5	-	-	1	2.5	2	5	3	7.5	-	-	1	2.5
Total	22	55	4	10	4	10	10	25	38	95	2	5	14	35	9	22.5	7	17.5	3	7.5	7	17.5

f= frequency, M=male, F=female, total number of M=33, total number of F=7

As it can be seen in Table 2 above, 75% of teacher respondents were in the age range of 20-39 years. Majority of teacher respondents (82.5%) were males. Regarding their qualification, 95% of teacher respondents were first degree holders and the remaining 5% were second degree holders. Besides, 35% of the teacher respondents have work experience in the range of 1-5 years in teaching. In the same way, 40 % of teacher respondents have work experience from 6-15 years, and the remaining participants (35%) have 16 years and above work experience in teaching.

Table 3: Families'/Guardians' Educational Levels

Highest Educational levels of parents/guardians	Streams of study			
	Natural science		Social science	
	F	%	f	%
Don't read and write	8	4.3	4	4
Read and write	53	30.6	43	43
Certificate	17	9.8	20	19.8
Diploma	36	20.8	15	14.9
First degree	45	26	13	12.9
Second degree and above	14	8.5	5	5

f=frequency

As it is shown in Table 3 above, about 4% of both streams female students' families/guardians do not read and write or have no educational background. Majority of parents/guardians can at least read and write.

4.3 Trend of Female Students' Enrollment across Streams of Studies

To examine the trend of female students participation across streams of studies before and after implementation of 70:30 ratio, their enrollment in grade 11 since 1999 E.C in the school under study have been used and the collected data were summarized and presented in Table 4 below. The 70:30 ratio was implemented in the school under study in 2001 academic year. It should be noted that the population for each academic year was female students in both streams.

Table 4 Enrollment of Female Students Before and After Implementation of 70:30

Ratio

Academic year (E.C)	Stream			
	Natural Science		Social science	
	f	%	f	%
1999	215	39	344	61
2000	238	52	216	48
2001	384	85	191	15
2002	526	64	299	36
2003	577	70	213	30
2004	586	63	340	37
Total	2525	61	1603	39

Source: Medhanialelem preparatory school record office.

As shown in Table 4 above, before the implementation of 70:30 ratio, of the total 1013 females enrolled in preparatory grade in the school under study, 44.7% of them

participated in natural science stream and the remaining 55.3% enrolled in social science stream. After the implementation of 70:30 ratio, Of the total 3116 female students registered in preparatory program in the four consecutive years 2073 (66.5%) were enrolled in natural science stream and the remaining 1043 (33.5%) were participated in social science stream. Before implementation of 70:30 ratio, the two years cumulative ratio of females' enrollment in natural science to social science was 45:55. After implementation of 70:30 ratio, even though there was fluctuation, the cumulative females participation in natural science to social science was 66.5:33.5. As it can be seen, in 2004 E.C academic year the enrolment ratio was 63:37. In addition, female students participation in natural science stream is low before implementation of 70:30, while after implementation the total enrollment rate of female students in natural science stream was in an increasing trend, while their enrolment in social science stream was decreasing. The proportion of female students placed in natural science stream after the implementation of 70:30 ratio is promising and it seems in line with MOE (ESDP IV, 2010/11).

4.4 Grade Point Average of Female Students in EGSECE

Table 5 below shows grade scored by sample female students in grade 10 Ethiopian General Secondary Education Certificate Examination (EGSECE) in 2003 E.C academic year as collected by questionnaires from female students.

Table 5: Examination Result of Female Student Respondents in EGSECE

EGSECE grade point average at grade 10	Present stream of study			
	Natural Science		Social science	
	F	%	F	%
2.00-2.20	19	11	23	22.8
2.21-2.40	32	18.5	43	42.7
2.42-2.60	36	20.8	17	16.8
2.61 and above	86	49.7	18	17.7

As shown in Table 5 above, 29.5% and 65.5% of female respondents from natural science and social science respectively confirmed that their EGSECE grade point average at grade 10 was in the range of 2.00-2.40. Whereas, 70.5% and 34.5 % of natural science and social science stream female participants respectively responded that their grade point average was 2.42 and above. Generally, majority of female students who were participating in natural science stream had higher grade point average than those in social science. The interviews collected from different informants agree with this result.

Majority of female students, school principals, and guidance & counselors informants in the interview indicated that the placement of students in different stream was done according to their EGSECE result. Those students with relatively high grade at EGSECE were placed in natural science stream while others in social science.

One of the female informants explained that:

Stream placement of students was done by our score in EGSECE. If your score was high you would be put in natural science and if you

scored low you would be placed in social science stream of study. In the placement process the school did not consider students' choice.

4.5 Effect of 70:30 ratio on Stream Choice

The dilemma facing preparatory school students in deciding their stream is influenced by subjects offered and studied in lower grades. Female student participants were asked if they believed that 70:30 ratio, the intake of natural science to social science, has influenced their prior choice at grade 9 and 10. Their responses were organized and presented in Table 6 below.

Table 6: Effect of 70:30 ratio on Female Students' Stream Choice

Item	Do you believe that you get forced not to choose your prior stream choice at grade 9 and 10 because of 70:30?				
	Yes		No		
Streams of study		f	%	f	%
	Natural Science	96	55.5	77	44.5
	Social science	52	51.5	49	48.5
	Grand total	148	54.0	126	46

As shown in Table 6, female students were asked if they get forced not to choose their prior stream choice at grade 9 and 10 because of 70:30. 55.5 % of females from natural science and 44.5% from social science responded that they were forced not to choose their prior stream choice at grade 9 and 10 due to 70:30 ratio. We can also observe that, majority of female respondent students from both streams, 148 (54%), indicated that they were forced to participate in their present stream against their prior choice at grade

9 and 10 by 70:30 ratio. The result obtained by interviewing participants goes with this result.

The other possible reason for placement of students in different stream, in addition to EGSECE score, according to most of the informants was 70:30 ratio. One of the female informants explained that:

...The school placed me in natural science stream because of 70:30 ratio. For me, it was a good chance as natural science stream was my favorite field of study, but many of my class mates were placed not in favor of their prior choice.

In placing students across streams, the school principals also believed that, students' with high scores could compete better in natural science so they were placed there and those with low scores in EGSECE was placed in social science (soft stream according to the principals).

One of the school principal said that:

... Students who scored low were not placed in natural science as much as possible....of course, when we did even this, we would be governed by 70:30 ratio. We only accept students according to the government policy. Before registration began, we prepared 20 classes for natural science and 9 for social science stream as we expected more students in natural science stream.

Generally, the placements of female students' in different stream of studies were based on 70:30 ratio and their score in EGSECE. Majority of female students believed that their stream choice was influenced by 70:30 ratio.

4.6 Students Respondents' Scores at their Present Stream of Study

To obtain some information of female students at their current stream of study, they were asked to indicate their first semester average grade score as given below.

Table 7: Average First Semester Grade Score of Female Student respondents at their Present Stream of Study (2004 E.C Academic Year).

Current average first semester grade	Present stream of study			
	Natural Science		Social science	
	f	%	f	%
Below 50%	20	11.7	4	3.9
50-60%	78	40.1	58	57.4
61-70%	35	20.2	31	30.7
Above 70%	40	23.1	8	7.9

f=frequency

As it can be seen from Table 7 above, regarding average first semester grade, 11.7% and 3.9% of female students from natural science and social science respectively scored below 50% in 2004 E.C academic year first semester exam. 40.1 % and 57.4 % of female student respondents have scored average first semester exam in the range of 50-60% from natural science and social science respectively. 20.2% of female students from natural science and 30.7% of female respondents from social science scored 61-70% average grade in first semester in 2004 E.C academic year. Similarly, 23.1% and 7.9% scored above 70% from natural science and social science respectively.

From the summarized data we can generalize regarding their average grade score in first semester grade 11, most of the students' from both streams scored in the range of 50-60%.

4.7 Influence of Individual Interest on Stream Choice

Individual interest plays a great role in educational stream choice of students. To identify the effect of individual interest influences on female students' stream choice, students were asked in the questionnaire and the information obtained is presented as follows.

Table 8: Data collected to see the effect of Individual Interest on Stream Choice

Statements	N		Strongly agree		Agree		Undecided		disagree		Strongly disagree		M	
	NS	SS	NS	SS	NS	SS	NS	SS	NS	SS	NS	SS	Natural science	Social science
I have chosen my present stream because I was interested in the subjects under the stream of study.	173	101	28 (16.2%)	30 (29.7%)	46 (26.6)	16 (15.8)	6 (3.5%)	2 (1.2%)	70 (40.5)	14 (13.9%)	23 (13.3%)	39 (38.6%)	2.92	2.84
I have chosen the current stream because I had better score in the subjects under the stream in grade 9&10.	173	101	24 (16.2%)	13 (12.9)	54 (31.2%)	24 (23.8%)	12 (6.9%)	6 (5.9%)	30 (17.3)	23 (22.8%)	53 (30.6%)	35 (34.5%)	2.83	2.57
I was interested in the stream because I can better understand the subjects under the stream easily.	173	101	28 (16.2%)	12 (11.9%)	45 (26.1%)	22 (21.8%)	14 (8.1%)	5 (4.9%)	25 (14.5%)	52 (51.5%)	61 (35.3%)	10 (9.9%)	2.73	2.74

N=number of respondents, strongly agree=5, agree=4, undecided=3, disagree=2, strongly disagree=1, M=mean, NS=natural science, SS=social science

In the Table 8 above, about 53.8% of natural science and 52.5% of social science female student respondents confirmed that they have not chosen their present stream on the basis of their interest to the subjects under each stream. Similarly, 47.4% of natural science female respondents revealed that they had better score in the subjects under the stream previously in grade 9 and 10, whereas 57% of female respondents indicated that they did not agree with this statement. On the other hand, 49.8% and 61.4% of natural science and social science students respectively agreed that they did not join their present stream on the basis of their better understanding of the subjects under the stream.

From the total response it can be seen that majority of the students were placed against their individual interest. The majority of the interview collected goes with this result.

One of female informant who placed in a stream out of her interest explained that:

.... አንድ ሰው በራሱ ፍላጎት ነው አንድን ነገር ማድረግ ያለበት። በእርግጥ ፍላጎት ባይኖረውም ሊያደርግ ይችል ይሆናል።... ነገር ግን ፍላጎቱ ኑሮና ሳይኖር የሚሠራ ሥራ አንድ አይደለም። በፍላጎታችን ነው የትምህርት ዘርፍም መምረጥ ያለብን። ያለ ፍላጎታችን ገብተን ውጤታማ ካልሆንን ምንም ጥቅም የለውም። በራሳችን ፍላጎትና አቅም የምንመርጥ ከሆነ ውጤታማ እንሆናለን። ተገደን የምንገባ ከሆነ ውጤታማ መሆን አንችልም ።

Roughly it is translated as:

...Everyone has to do anything according to his/her own interest. Without interest one cannot be successful in life. Forcing one on what he/she is not interested in, may hinder what he/she actually is likely to do. The same is true in case of stream choice too. We need to enroll in any stream

according to our interest and ability so that we will be successful. If we get enforced to any stream of study out of our interest, we may not be successful.

The other female participant in the interview disclosed that, students who were assigned without their interest tried to exchange by looking other students who were misplaced like them. The chance of getting such individual was poor especially for those who misplaced in natural science stream since their number was not proportional to social science. If they were not able to find these students of the same interest, they would be forced to study against their interest.

Further, one of the school principal and the other school guidance and counselor in the interview unanimously disclosed that some of the students who were misplaced, after studying in the stream for some months raise questions of withdrawal. Such students would be absent from class frequently and brought sick leave. The school guidance & counselor reported from his experience that:

If these students were asked about their reason for withdrawal and frequent absence in detail, most of them responded because they felt discomfort in the stream they were placed without their interest and ability.

Most of the female participants in the interview revealed that it is difficult to be successful in any field without interest. Another female participant who was participating in natural science without her preference revealed her emotion as follows:

I was placed in natural science stream out of my interest. Now at the moment, I feel regretted for studying in natural science stream. If I had

been enrolled in social science I might have been successful....I don't think so I would be successful in the future too.....in addition my senior friends in higher education who were participating without their preference in natural science stream told me that they were facing difficulties in their studies.

This is in line with the study of Athanasou as cited in Athanasou (2009) which stated that interest is important for learning and working. Moreover, individual interest plays a significant role in stream and career choice throughout individual student's life.

4.8 Role of Guidance & Counselor on Stream Choice

Guidance & counselors can solve different factors that affect students' participation interacting with students and help them to choose appropriate stream of study.. Lack of such professionals seems to contribute to wrong decision of females' stream choice. Female respondents were asked about the influence of guidance & counselors upon their decision to their stream of study. The information obtained is presented in table below.

Table 9: Role of School Guidance & Counselors on Stream Choice

Statements	F	Strongly agree	Agree	Undecided	disagree	Strongly disagree	M
I have chosen my present stream because of advice I got from guidance & counselors.	274	11 (4.0%)	18 (6.5%)	9 (3.3%)	126 (46%)	113 (40.2%)	1.89
The overall orientation given by guidance and counselor on both streams encouraged me to choose my present stream.	274	5 (1.8%)	17 (6.2%)	11 (4.0)	115 (42.0%)	118 (46%)	1.73
I usually get better advice when I face some kind difficulties in my education including stream choice.	274	30 (10.9%)	70 (25.5%)	15 (5.5%)	102 (37.2)	62 (22.6%)	2.70

Strongly agree=5, agree=4, undecided=3, disagree=2, strongly disagree=1, M=mean

As shown in Table 9 above, more than 86% of female students indicated that they chose their present stream not because of advice they got from guidance & counselors. Most of these respondents i.e. about 88.6% were not encouraged as well as oriented by guidance & counselors during stream choice. Likewise, 59.8% of the respondents revealed that they did not usually get guidance and counseling service in the school when they face difficulties in their education including stream choice. The information obtained through interview also agrees with this result.

Students in the interview confirmed that, they were not oriented about the streams before the placement by guidance and counselors. They were put into each stream without support and advice from the school guidance and counselors.

Most of female student participants' response to the interview regarding guidance and counseling indicated that, they were not getting support.

One of the female participants said that:

...I only know the presence of the guidance and counseling office and professionals in the field in our school....They did not play any kind of role during our stream choice. I have no detailed information about the stream by the time I was placed in the current stream. ...They were not helped me in stream choice.

Even though professionals were assigned for counseling service, students' response indicated that the service was not properly provided during stream choice and when they encounter problems of any kind on their education. Both school guidance & counselors in the interview confirmed that their responsibility was not clearly defined in the school program, guidance and counseling has no recognition, not structured, and school principals didn't know it even. They believed that they have not played what was expected from them in females' stream choice. Lack of organized school guidance & counseling service influenced students' stream choice. From this discussion, it is evident that guidance & counselors seemed not carried out their responsibility as indicated in Pandey. In his study, Pandey (2008) explained that guidance and counseling is an integral part of each school and are certified professionals aimed to support teachers, administrators, students, and parents.

4.9 The role of Parents'/Guardians' on Stream Choice

Parents/guardians attitude to their children's education can play a role on their stream of study. Students were asked about their parents'/guardians' attitude and their role in stream choice. Their response was given as follows.

Table 10: Role of Parents'/Guardians' on Stream Choice

Statements	N	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	M
My family/guardian enforced me to choose my current stream.	274	28 (10.2)	14 (5.1%)	7 (2.6%)	109 (39.9%)	115 (42%)	2.01
Free discussion between I and my parents/guardians of the long term benefit of the stream encouraged me to select the current stream.	274	110 (40.1%)	71 (25.9%)	6 (2.2%)	53 (19.3%)	32 (12.5%)	3.50
My parents/guardians promised to support me better in my present stream than the other stream.	274	77 (28.1%)	37 (13.5%)	13 (4.7%)	94 (34.4%)	53 (19.3%)	2.72

N =number of participant, strongly agree=5, agree=4, undecided=3, disagree=2, strongly disagree=1, M=mean

As shown in Table 10 above, about 81% of female student respondents indicated that their family/guardian did not enforce them to choose their current stream. Similarly, more than 53% of the female respondents believed that their guardians/ parents did not influence them to enroll in their current stream by promising them a better support. However, more than 65% of them responded that free discussion on the long term benefits of the stream between them and their family/guardian encouraged them in choosing their present stream. We can generalize that majority of parents/guardians contribution on students stream choice was based on discussion rather than enforcement.

Most of female student participants disclosed that, there was free discussion in their family/guardian in different issues including stream choice. The interview made with female

students also confirmed that before choosing a stream, they made a detail discussion with their families. Most of the female participant revealed that their families understand the long term benefit of education. Thus, family/guardian supports them and did not interfere with their children's choice of stream.

One of the female informants explained her experience with her families as follows:

...I am from educated family...There is often open discussion on different issues particularly on my education. My interest in the future is to become medical doctor and my parents' interest was similar with me...

As it was indicated, majority of the educational back ground of the family/guardian of female respondents showed that they can at least read and write. In the interview, most female informants revealed that their parents advised them to choose any stream of their interest. This response is in line with the study of Leuine and Havighurst (1992) which stated that parents who are educated might have a positive attitude about children's education and students achieve better in a family where there is high verbal discussion.

4.10 Impact of Societal Attitude on Stream Choice of Female Students

Attitude of the society on females' education can play a great role in choice of stream of study. Societies' perception and attitude towards gender role and responsibilities have great impact on females' educational stream choice. To identify the effect of societal attitude in influencing stream choice, female students were asked using questionnaire and their response is given in Table 11 below.

Table 11: The Role of Societal Attitude on Stream Choice of Female Students

Statements	N		Strongly agree		Agree		Undecided		disagree		Strongly disagree		M	
	NS	SS	NS	SS	NS	SS	NS	SS	NS	SS	NS	SS	NS	SS
The society I am living in believes that female students can be successful in any stream of study.	173	101	79 (45.7%)	55 (54.5%)	57 (32.9%)	23 (22.8%)	10 (5.8%)	7 (6.9%)	19 (11%)	8 (7.9%)	8 (4.6%)	8 (7.9%)	4.04	4.07
The society believes that females should better participate in social science stream to science.	173	101	15 (8.7%)	16 (15.8%)	25 (14.5%)	10 (9.9%)	13 (7.5%)	10 (9.9%)	51 (29.5%)	28 (27.7%)	69 (39.8%)	37 (36.7%)	2.23	2.41
The society imposed me to participate in my present stream.	173	101	34 (19.7%)	13 (12.9%)	45 (26.0%)	12 (11.9%)	11 (6.4%)	11 (10.9%)	44 (25.4%)	30 (29.7%)	34 (22.5%)	35 (34.6%)	2.92	2.39

N=number of respondents, strongly agree=5, agree=4, undecided=3, disagree=2, strongly disagree=1, M=mean, NS=Natural science, SS=Social Science

As shown in Table 11 above, 78.6% and 77.3% of female student respondents of natural science and social science respectively confirmed that, the society believes female students can be as successful as males in any stream of study. On the top of this, 69.3% of natural science and 64.4% of social science female respondents believed that there is no bias in the society regarding the participation of female students in either natural science or social science streams of study. More than 47% and 64% of science and social science students respectively revealed that the society did not imposed female students to participate in any type of stream. The interview made with female informants strengthens this result.

Majority of female informants reported that, societal attitude towards female education is changed. Most of female informants believed that the society encouraged female students to compete and in any field of study. One female participant explained that:

The society I am living in, particularly my neighbors believed that female students can be successful if they participate in any stream of study....They encourage females when they participate in natural Science field of study.

Furthermore, female student informants confirmed that there is no feminine or masculine subject or stream of study in the society. But this result is not consistent with the reviewed related literature Cobern (1998) which reported that females are discouraged by their society to enroll in science field of study.

4.11 Influence of Peers on Stream Choice

Students in the school encounter peers of similar age. They are exposed to peers organized activities and evaluate themselves from their peers' point of view (Myer, 2001). Table below shows the influence of peers on females' stream choice.

Table 12: Influence of Peers on Stream Choice of Female Students

Statements	N	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	M
I have chosen the current stream by peers' enforcement.	274	17 (6.2%)	6 (2.2%)	9 (3.3%)	110 (40.1%)	142 (48.4%)	1.82
I often respect my peers' advice than any other.	274	20 (7.3%)	27 (9.9%)	28 (10.21%)	105 (38.32%)	94 (34.31%)	2.18
I have chosen my stream not to depart from my class mate.	274	13 (4.7%)	13 (4.7)	12 (4.4%)	83 (30.3%)	148 (59.9%)	1.70

N=number of respondents, strongly agree=5, agree=4, undecided=3, disagree=2, strongly disagree=1, M=mean

As it can be seen from Table 12 above, about 88% revealed that they were not enforced by peers to choose their stream. On the top of that, about 72% of them responded that they did not often respect their peers' advice. Likewise, more than 89% of female student respondent revealed that they have not chosen their current stream not to depart from their peers. In general, it is evident that the majority of female students believed that they have not chosen their current stream due to peer enforcement. Information collected from female students through interview goes with this result.

Most of the female informants responded that even though there was peer enforcement, they were not dominated by it. Concerning peer influence one informant from natural science explained this as:

...I have four friends. Their choice was to participate in social science stream and they are participating there and I am participating in natural science stream.

As it can be seen from female students' questionnaires and interview, the contribution of their class mates/peers was not significant in determining their stream of study. The result is not consistent with Kandle, as kandle cited in Degefe (2008), which reported that females at secondary school are more influenced by their peers.

4.12 Influence of Teachers' Attitude on Females' Stream Choice

Teachers have their due role in polishing and shaping students' personality including their academic matters. The following table shows the feeling of students towards teachers attitude to female students stream choice.

Table 13: Influence of Teachers' Attitude on Stream Choice of Female Students

Statements	N		Strongly agree		Agree		Undecided		disagree		Strongly disagree		M	
	NS	SS	NS	SS	NS	SS	NS	SS	NS	SS	NS	SS	N	SS
Teachers believe that females can be successful in any stream as male students.	173	101	23 (13.3%)	10 (9.9%)	44 (25.4%)	15 (14.9%)	17 (9.8%)	10 (9.9%)	49 (28.3%)	32 (31.7%)	40 (23.2%)	34 (33.6%)	2.77	2.36
Teachers enforce males to choose natural science, and females to choose social science stream.	173	101	92 (53.1%)	49 (48.5%)	58 (33.5%)	26 (25.7%)	10 (5.8%)	5 (4.9%)	5 (3%)	15 (14.9%)	8 (4.6%)	6 (5.9%)	4.28	3.96
I have chosen the current stream because of teachers encouragement.	173	101	17 (9.8%)	4 (3.9%)	35 (20.2%)	8 (7.9%)	10 (5.8%)	5 (4.9%)	60 (34.7%)	37 (36.6%)	51 (29.5%)	47 (46.7%)	2.26	1.86

N=number of respondents, strongly agree=5, agree=4, undecided=3, disagree=2, strongly disagree=1, M=mean, NS= natural science, SS= social science

As it can be seen from the Table 13, 51.5% and 65.1% of female student respondents in natural science and social science streams respectively revealed that, their teachers believe that female students cannot be successful in any stream as male students. On the other hand, most of female respondents, 86.6% of natural science stream and 74.2% of social science stream believed that teachers enforced males to choose natural science and females to choose social science stream. 64.5% of natural science and 83.3 %of social science students indicated that they did not join in their present stream because of teachers' encouragement. The finding of the study also depicted that majority of the students were not encouraged through comments and advice from teachers. The information collected through interview agrees with this result.

Female informants believed that most teachers were found to be unhelpful and uncooperative to solve female students' academic problems. Because of this, they felt discomfort in class. It is evident that female students were not at ease and not recognized as males by their teachers' in class.

One of the female participants explained that:

In class teachers discourages us...They negatively influenced female students in class activity and rather encourage males.... I decided to change the school to find a better school which treat students equally with no gender bias. By the coming academic year I have arrived to the decision with my parents to leave the school because of teachers influence.

Majority of female informants in the interview confirmed that, in most cases teachers encouraged female students to participate in social science. It was also reported by students (from natural science stream) that when they failed to respond to question raised in the class, teachers blamed them for their joining their present stream. This negatively influenced students self confidence and their choice of stream. This is in line with the findings of Zeida (2008) and Abbott (2010) explained that teachers' acceptance of natural science gender role stereotypes may influence their attitudes and practices in teaching and affect female students' participation in the field.

Female student respondents were also asked to list out other factors that affect their decision to select female students Stream choice; their response was listed as follows: students' attitude to stream subjects; job opportunity, ability to the subjects under stream, and government policy.

4.13 Teachers' View towards Female Students' Stream Choice

The following table shows the felling of teachers towards female students stream choice.

Table 14: Teachers' View towards Female Students' Stream Choice

statements	N	Responses										
		Strongly agree		Agree		Undecided		Disagree		Strongly disagree		M
		F	%	f	%	f	%	F	%	f	%	
Natural science for me is males' stream.	40	1	2.5	5	12.5	4	10	6	15	24	60	1.83
I often encourage males to females to join natural Science stream.	40	10	25	9	22.5	8	20	6	15	9	22.5	2.53
Female students compete better in social science stream.	40	10	25	14	35	5	12.5	5	12.5	6	15	3.43
Females rarely respond to questions raised in class discussion.	40	5	12.5	21	52.5	6	15	7	17.5	1	2.5	4.18
I mainly forward questions of low level to females.	40	3	7.5	8	20	3	7.5	17	42.5	9	22.5	2.48
I have done nothing to make females more interested in natural science stream.	40	14	35	11	27.5	8	20	3	7.5	4	10	3.70

N=number of respondents, strongly agree=5, agree=4, undecided=3, disagree=2, strongly disagree=1, M=mean

As shown in Table 14 above, 75% teachers responded that natural science was not only males' stream. On the other hand, 47.5% of teacher respondents revealed that they often encourage males to females to join science stream. The majority i.e. 60% of teacher respondents believed that female students compete better in social science stream of study. About 65% of teacher respondents confirmed that females rarely responded to

questions raised in class discussion. In a similar way, 62.5% of teacher respondents pointed out that they have done nothing to increase interest of female students to participate in natural science stream of study. Teachers encourage female students to join social science stream in natural science stream of study which contradicts with female students response to the questionnaires. These results are not consistent with Sadker et al. (2007) which explained that science is truly for everyone with no gender disparity and girls can participate freely in science and involve in scientific experience further.

Teachers respondents were listed the following possible factors that affect female stream choice; work load at home, educational policy, lack of information about the streams, job opportunity, lack of self confidence and economical factors.

Teachers were also listed the following points to alleviate the problems; promoting 70:30 ratio using different media, helping female students through special tutorials, awarding better talented females starting from lower grades, and discussing 70:30 ratio openly with society at all levels, and the government should give attention to 70:30 as other programs and packages.

CHAPTER FIVE

5. Summary, Conclusion, and Recommendation

5.1 Summary

The purpose of this study was to identify major factors that affect female students' stream choice in preparatory school. It also aimed to examine female students' stream choice with respect 70:30 ratio. In order to attain the desired objectives, relevant documents were collected, questionnaires were prepared and distributed, interviews were carried out, and relevant data were collected, analyzed, and interpreted.

The study was carried out in Medhanialem Preparatory school in Addis Ababa. The samples were taken from female students, teachers, school principals, guidance & counselors. Questionnaires were distributed to female students and teachers. Semi structured interviews were also carried out with female students, guidance & counselors, and school principals. An official record data of female students' participation in different stream was collected from the school record office.

Depending on the result of the study the following major findings were obtained:

- Female students' participation in natural science stream is low before implementation of 70:30 ratio, while after implementation the total enrollment rate of female students in natural science stream was in an increasing trend and their enrolment in social science stream was decreasing.
- The majority of female students were in the age range from 16-18 years,

- The majority of female students' families/guardians at least can read and write. They were supporting their children's in academic careers of education and there were free discussion in stream choice,
- The placements of students in different stream were governed by 70:30 ratio and students EGSECE results at grade 10,
- Stream placement of female students did not take individual interest of students into consideration,
- Majority of female students at grade 11 in 2004 E.C academic year in first semester average score lied in the range of 50-60% ,
- Majority of female students were influenced by 70:30 not to choose their prior choice of stream at lower grades (grade 9 and 10),
- Despite the fact that there were professional and experienced guidance & counselors in the school, they were not functioning properly and not supporting students in their academic issues such as stream choice. In addition, students were not oriented/advised about streams of study by school guidance & counselors before the placement,
- Most teachers were found to be uncooperative to solve female students' academic problems. They rather discourage female students and blame those enrolled in natural science for their current enrollment in the stream of study,

- Societal attitude to female education was changing. Most of the societies female students living with encourage them to compete in any stream and believe that they can be successful in any field of study,
- Individual interest, parental/guardian attitude, and societal attitude are factors that positively influenced their choice of stream. While lack of support, advice and low of expectation of teachers negatively influenced stream choice female students, and lastly
- Female students' stream choice was not significantly influenced by peers enforcement.

5.2 Conclusions

Based on the major findings obtained from the discussion and interpretation made, the following conclusions were drawn.

- Before the implementation of 70:30 ratio, the ratio of females participating in natural science to social science was 45:55. After implementation of 70:30 ratio, in four consecutive years in preparatory school under the study, female students' participation in natural science is increasing. The cumulative female students' participation ratio in natural science to social science in the last four consecutive years in the school under study was 66.5:33.5. Currently, the ratio of females' participation in natural science to social science in 2004 academic year is 63:37 which seems in line with MOE (ESDP, 2010/11). But the result of the study revealed that the placement did not consider students' interest. This result indicates that, there

was a gap in the implementation of 70:30 ratio as the government was targeted to attain it by 2014/15 progressively to prepare citizens who make decisions about social issues that involve science and technology. Placing a student in a given stream without her interest might not provide the expected citizen ,

- Different findings indicated that individual interest is a major factor in educational stream choice and achievement of students. But, the result of this study revealed that most of female students were enrolling in different streams of study against their interest,

- Students in secondary school need support of guidance & counseling as they are at adolescent age. They also need detailed information and advice about different streams of study to make the right choice. But in the school under this study, even though there were concerned bodies and qualified experts in the area, they were not supporting students as required. There was a structural and organizational gap between guidance & counselors and school principals. Hence, we can conclude that in the absence of coordination among these groups, guidance & counseling service could not be properly delivered to students. Consequently, the absence of this service may likely create problems on students choice of stream,

- The result of this study showed that the following major factors influenced female students stream choice: Individual interest to stream, 70:30 ratio, attitude of Parents'/guardian's, lack of guidance and counseling service, poor expectation of teachers' to female students successfulness in natural science, and societies encouragement and trust in the competency of female students in different streams.

The result also indicated that, peers influence was not significantly contributed to female's stream choices.

5.3 Recommendations

Based on the major findings and conclusions drawn from the study, the following points are recommended.

1. Students' grade point average in EGSECE can be affected due to different reason as there is a possibility to get done above or below the expectation. Thus, placing students in different stream only based on their EGSECE and 70:30 may result in placing students in a given stream without their interest. Therefore, individual interest of the students should be taken into consideration while placing students in different streams of study at preparatory grade level. But the research result showed that most students were not comfortable with their current stream. Due attention should be given to individual interest of the students as their present choice determine their further study and contribution to the development of the country.
2. Problems related to female students' stream choice should be solved earlier before students begin preparatory grade level. For example by creating awareness about 70:30 ratio, special programs such as campaign and celebrities which encompass students, parents, teachers, and community at large should be organized on female students' stream choice. For example, celebrating 70:30 ratio and females and natural science day, females and science day, etc in order

to initiate stakeholders' interest and create awareness particularly at lower grades.

3. School guidance and counseling should be strengthened by preparing plan which aligned with school program. The result of the study showed there was a gap between guidance & counselors and students. Guidance & counseling service needs to be incorporated with the overall development plan of the school. It should support students in their academic problems and give great emphasis when they are placed in different streams.

4. Teachers at all grade levels, especially at preparatory school should have the motive to encourage and advice female students on their study. In addition, they need to be trained on gender issues by collaborating with organizations working on gender issues; awarding those who better contributed and encouraged females' education. Over and above, in the issues of selection of streams teachers need to encourage female students and generate a sense of motivation amongst natural science female students.

5. Short term training should be given to School principals by the government on policies and programs (e.g. 70:30 ratio) as well as their implementation.

6. Systematically structured design should be developed at all grade levels regarding streams of study in line with the developmental direction and needs of the country.

7. In order to create awareness, natural science clubs need to be organized at different school levels (particularly at primary and general secondary schools)

which encompass teachers, school principals, school guidance & counselors, students, and family/guardian.

8. Further study is recommended to find out other factors that affect female students' stream choice in preparatory grade level.

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Appendix A

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE OF EDUCATIONAL RESEARCH

QUESTIONNAIRES FOR FEMALE STUDENTS

This study aims to provide information on the factors affecting female students' Stream Selection in preparatory grade level. It seeks to understand the factors affecting female students' stream choice in preparatory school. The study is being done for a Masters Degree in Educational Research and Development.

KINDLY NOTE THE FOLLOWING:

- Complete all questions as honestly as possible. Please not leave out any question.
- There are no right and wrong answers, and
- Strict confidentiality is promised.
- Put “√” on your response.

A. Personal Information

1. Age group
 - 13 -15 years [1]
 - 16 years or older..... [2]
 - Above 18 years[3]
2. With whom do you live at home?
 - Mother only[1]
 - Father only [2]
 - Mother and Father[3]
 - Other (Specify).....[4]

3. What is the **highest** level of education of the person(s) with whom you are living?

Do not read and write [1]

Certificate [2]

Diploma [3]

First degree [4]

Second degree and above [5]

B. Concerning stream choice

4. What stream are you studying? (Please specify):

Natural science [1]

Social science [2]

5. What was your grade point average at grade 10 EGSECE?

2.00-2.2 [1]

2.21-2.4 [2]

2.41-2.6 [3]

2.61 and above [4]

6. What is your average first semester at your present stream?

Below 50% [1]

50-60% [2]

60-70% [3]

above 70% [4]

7. Do you believe that 70:30 negatively affected not to choose your prior choice of stream at lower grades?

Yes [1]

No [2]

**8. Section C SECTION C: PULL FACTORS (ATTRACTORS) TO
SELECT SCIENCE STREAM:**

Tick the responses which best reflects your feelings toward each of the statements below.

Strongly agree =5

Agree =4

Undecided =3

Disagree =2

Strongly disagree=1

No.	statement	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
8.1	I have chosen my present stream because I was interested to the subjects under the stream of study.					
8.2	I have chosen the current stream because I had better score in the subjects under the stream in grade 9&10.					
8.3	I was interested in the stream because I can better understand the subjects under the stream easily.					
8.4	I have chosen my present stream because of advice from guidance and counselors.					
8.5	The orientation given by guidance and counselor on both streams encouraged me to choose my present stream.					

8.6	I usually get better solution when I face some kind difficulties in my education.					
8.7	My family/guardian enforced me to choose my current stream.					
8.8	The mutual understanding between I and my parents/guardians of the long term benefit the stream encouraged me to select the current stream.					
8.9	My parents/guardians promised to support me better in my present stream.					
8.10	The society I am living in believes that female students can be successful as males in any stream of study.					
8.11	The society believes that females should better participate in social science stream to science.					
8.12	The society imposed female students to participate in my present stream.					
8.13	I have chosen the current stream by peers' enforcement.					
8.14	I often respect my peers' advice than any other.					

8.15	I have chosen my stream not to depart from my class mate.					
8.16	Teachers believe that females can be successful in any stream as male students.					
8.17	Teachers enforce males to choose natural science, and females to choose social science stream.					
8.18	I have chosen the current stream because teachers encouragement.					

9. List any other reasons for your decision to select the Science Stream.

.....

.....

.....

Appendix B

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE OF EDUCATIONAL RESEARCH

QUESTIONNAIRES FOR TEACHERS

You are randomly selected from a pool of currently employed preparatory school teachers. You will not be identified by name. All information provided by you will be treated as strictly confidential. I thank you!

Tick on your response.

A) Personal data

1. Sex:

Male[1]

Female[2]

2. Age:

20-29 1]

30-39[2]

40-49[3]

50 years and above.....[4]

3. Year(s) of teaching experience:

1-5 years.....[1]

6-10 years.....[2]

11-15 years[3]

16-20 years.....[4]

Above 20 years.....[5]

4. Qualification

Diploma[1]

First degree[2]

Second degree.....[3]

Doctorate degree.....[4]

B) Factors affecting female students stream choice

5. **Tick** the responses which best reflect your feelings toward each of the statements below.

Strongly agree =5 Agree =4

Undecided =3 Disagree =2

Strongly disagree=1

No	Statements	Responses				
		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
5.1	Natural science for me is males' stream.					
5.2	I often encourage males to females to join natural Science stream.					
5.3	Female students compete better in social science stream.					
5.4	Females rarely respond to questions raised in class discussion.					
5.5	I mainly forward questions of low level to females.					

5.6	I have done nothing to make females more interested in natural science stream.					
-----	--	--	--	--	--	--

6. List possible factors that influence female students' stream choice.

.....
.....
.....

7. List possible solutions to alleviate the problem of females' stream choice.

.....
.....
.....

Appendix C

Interview guide for school principals

1. How did you place female students into different streams?
2. Were there free choices of stream?
3. Have students oriented/advised before placement?
4. Have you ever advised female students in school regarding 70:30 ratio?
5. Do you believe that 70:30 affected female students' stream choice?
6. What do you think is expected from school principals in school during stream choice at grade 11?

Appendix D

Interview guide for school guidance and counselors

1. What is your work experience as a guidance and counselor?
2. How often female students get guidance and counseling service in your office?
3. Do you have students counseling schedule?
4. Do you help students to learn according to their own interest in any stream they like?
5. Have you ever advised female students in school on 70:30 ratio?
6. Have you ever given advice/orientation to students in school during stream choice at grade 11?
7. What is expected from guidance and counselors in school during stream choice at grade 11?

Appendix E

Interview guide for female students

1. How did you choose your current stream?
2. Do you believe that you are participating in the stream you were interested in lower grades?
3. Do you believe that 70:30 affected your prior stream choice in lower grades?
4. How often did you get guidance and counseling service in your school?
5. What was the role of guidance and counselor on female students stream choice?
6. What was the role your parents/guardians on your stream choice?
7. Which stream does the society believe female students' stream?
8. Have you influenced by your friends/peers to choose your current stream?
9. Which stream do your teachers believe is female students' stream?
10. What other factors do you believe affect female students' stream choice?

Appendix F

በሴት ተማሪዎች የሚሞላ መጠይቅ

የዚህ ጥናት ዋና ዓላማ ሴት ተማሪዎች ወደ መሰናዶ የትምህርት ደረጃ ሲደርሱና የትምህርት ዘርፍ ሲመርጡ ተጽዕኖ የሚፈጥሩባቸውን ነገሮች ለመለየት የተዘጋጀ ነው። በተጨማሪም በእነዚህ ጉዳዮች ዙሪያ የተሻለ ግንዛቤ ለመፍጠር ያግዛል። ጥናቱ ለሁለተኛ ዲግሪ ማሟያ / በEducational Research and Development/የተዘጋጀ ነው።

- ጥያቄዎቹን በጠቅላላ በታማኝነት በመመለስ እንድትተባበሯች እጠይቃለሁ።
- ትክክል ወይም ትክክል ያልሆነ የሚባል መልስ የለም።
- የምትሰጡት መልስ ሚስጥራዊነቱ የተጠበቀ ነው።
- “√” ክፍት ቦታው ላይ በማድረግ ምርጫሽን አስቀምጧል።

ሀ. የግል ሕይወት ታሪክ

1. ዕድሜ

ከ 13-----15 አመት.....[1]

ከ16.....18 አመት[2]

ከ18 አመት በላይ[3]

2. ከማን ጋር ትኖራለሽ?

ከእናቴ ጋር.....[1]

ከአባቴ ጋር.....[2]

ከእናትና ከአባቴ ጋር.....[3]

ሌላ ካለ ይጠቀሱ.....[4].....

3. የቤቴሰቦችሽ/የአሳዳጊዎችሽ ከፍተኛ የትምህርት ደረጃ:-

ማንበብና መጻፍ አይችሉም።.....[1]

ማንበብና መጻፍ ይችላሉ።[2]

በሰርትፊኬት የተመረቁ ናቸው።.....[3]

በዲፕሎማ ተመርቀዋል።.....[4]

የመጀመሪያ ዲግሪ አላቸው።.....[5]

ሁለተኛ ዲግሪና ከዚያ በላይ አላቸው።.....[6]

ለ. የትምህርት ምርጫን በተመለከተ

4. አሁን እየተማርሽ ያለሽው የትምህርት ዘርፍ የትኛው ነው?

የተፈጥሮ ሳይንስ [1]

ሶሻል ሳይንስ [2]

5. ከ10ኛ ወደ 11ኛ ስታልፍ ያመጣሽው አማካይ ውጤት ስንት ነው?

2.00-2.2 [1]

2.21-2.4 [2]

2.41-2.6 [3]

2.61 እና ከዚህ በላይ [4]

6. አሁን በመሰናዶ ትምህርት የመጀመሪያ መንፈቀ አመት አማካይ ውጤትሽ?

ከ50% በታች ነው። [1]

ከ50-60% ነው። [2]

ከ60-70% ነው። [3]

ከ70% በላይ [4]

7. 9ኛና 10ኛ ክፍል እያለሽ ቀድሞ የምትፈልገውን ዘርፍ እንዳትመርጧል 70:30 የትምህርት ፖሊሲ ፍላጎትሽ ላይ አሉታዊ ተጽዕኖ ፈጥሮብኛል ብለሽ ታምኛለሽ?

አዎ አምናለሁ። [1]

አይ አላምንም። [2]

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ADDIS ABABA ETHIOPIA

8. ክፍል [ሐ] :- የትምህርት ዘርፍ አመራረጥን በተመለከተ አሁን እየተማርሽ ያለሽውን የትምህርት ዘርፍ እንድትመርጩ / እንዳትመርጩ ያደረገሽን ነገር በሚከተለው ሠንጠረዥ ቀርቧል:-

የሚከተሉትን ዐረፍተ ነገሮች በጥንቃቄ በማንበብ እያንዳንዱ ዐ.ነገር ምን ያህል እራስሽን እንደሚገልጽ ከተሰጡት አማራጮች አንዱን በመምረጥ በትክክል ስሜቴን ይገልጹልኛል ብለሽ ያመንሻቸው ዐ.ነገሮች በተሰጡት ምርጫዎች ላይ የ “ ✓ “ ምልክት አድርጊ። ስለአደረግሽልኝ ትብብር በቅድሚያ አመሰግናለሁ!

- በጣም እስማማለሁ =5
- እስማማለሁ =4
- አልወሰንኩም =3
- አልስማማም = 2
- በጣም አልስማማም=1

ተ.ቁ	ዐ.ነገር	በጣም እስማማለሁ	እስማማለሁ	አልወሰንኩም	አልስማማም	በጣም አልስማማም
8.1	አሁን እየተማርኩ ያለሁትን የትምህርት ዘርፍ የመረጥኩት አማካሪዎች [ጋይዳንስና ካውንሲሊንግ] በሰጡኝ ምክር ነው።					
8.2	አንዳንድ ችግሮች በትምህርት ላይ ስያጋጥሙኝ (ዘርፍ ምርጫ) ከአማካሪዎች የተሻለ መፍትሄ አገኛለሁ።					
8.3	ያለሁበትን ትምህርት ዘርፍ የመረጥኩት በጋይዳንስና ስካውንሲሊንግ የዘርፉን ትምህርቶች በተመለከተ በተሰጠው አጠቃላይ ገለፃ ተማርኬ ነው።					
8.4	በወላጆቼ/በአሳዳጊዎቼ ምክር አሁን እየተማርኩ ያለሁበትን ዘርፍ ለመምረጥ ተገድኛለሁ ።					
8.5	ወላጆቼ/አሳዳጊዎቼ አሁን እየተማርኩ ያለሁትን የትምህርት ዘርፍ ጠቀሜታ ስለተረዱና እንድንገባ ስላበረታቱኝና እኔም ስላመንኩበት መርጫለሁ።					
8.6	ወላጆቼ/አሳዳጊዎቼ ባለሁበት የትምህርት ዘርፍ የበለጠ እገዛ ለማድረግ ቃል ስለገቡልኝ መርጫለሁ።					
8.7	አሁን እየተማርኩ ያለሁትን የትምህርት ዘርፍ የመረጥኩት በክፍል ጓደኞቼ ተገፋፍቼ ነው።					

8.8	ከሌሎች ይልቅ ለክፍል ጓደኞቹ ምክር ቅድሚያ እስጣለሁ።					
8.9	የክፍል ጓደኞቹ ላለመለየት ብዬ ያለሁበትን ዘርፍ መርጫለሁ።					
8.10	አሁን እየተማርኩ ያለሁትን የትምህርት ዘርፍ የመረጥኩት ራሴ ለዘርፉ በነበረኝ ፍላጎት ነው።					
8.11	ያለሁበት የትምህርት ዘርፍ ውስጥ ባሉት ትምህርቶች የተሻለ ውጤት ስለነበረኝ መርጫለሁ።					
8.12	ከሌላው የትምህርት ዘርፍ ይበልጥ በቀላሉ ስለምረዳና ስለምወደው ያለሁበትን ዘርፍ በፍላጎቴ መርጫለሁ።					
8.13	ባለሁበት ህብረተሰብ ሴቶች ከወንዶች እኩል በትምህርታቸው ውጤታማ ናቸው ተብሎ ስለምታመን ሴቶች የትኛውንም የትምህርት ዘርፍ ምርጫቸው ቢያደርጉ ይደግፋል።					
8.14	ህብረተሰቡ ሴቶች ከሳይንስ ይልቅ ሶሻል ሳይንስ ቢማሩ ትክክል ነው ብሎ ያምናል።					
8.15	ባለሁበት ህብረተሰብ አሁን እየተማርኩ ባለሁበት ዘርፍ ሴቶች እንዲሳተፉ ስለሚበረታቱ መርጫለሁ።					
8.16	መምህራን ሴቶች በየትኛውም የትምህርት ዘርፍ ተወዳዳሪ ናቸው ብለው ስለሚያበረታቱኝ እየተማርኩ ያለሁበትን ዘርፍ መርጫለሁ።					
8.17	መምህራን ወንዶች ሳይንስ፤ ሴቶች ደግሞ ሶሻል ሳይንስ የትምህርት ዘርፍ ምርጫቸው እንዲያደርጉ ይገፋፋሉ።					
8.18	አሁን እየተማርኩ ያለሁትን የትምህርት ዘርፍ የመረጥኩት መምህራኖቹ በዚህ ዘርፍ እንድማር ያበረታቱኝ ስለነበረ ነው።					

9. ከላይ ከተጠቀሱት ውጪ አሁን ያለሽበትን የትምህርት ዘርፍ የመረጥሽበት ሌሎች ምክንያቶች ካሉ ዘርዝሪ:

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