

# PROJECT PROPOSAL PROFORMA

Candidates information

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Title of the Project : Impact of ChildFund's Basic Education Program on Academic Performance of Grade Nine Students in Buee Town, Sodo Woreda.

(By The Supervisor)

I hereby certify that the proposal for the Project entitled Impact of ChildFund's Basic Education Program on Academic Performance of Grade Nine Students in Buee Town, Sodo Woreda. By Abebe Aragaw has been prepared after due consultation with me. I agree to supervise the above mentioned Project till its completion.

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# 1. INTRODUCTION<sup>1</sup>

## 1.1. Background of the Study

**Geographical context:** The study area is located in Sodo Woreda of Garage Zone, SNNPR (South Nation and Nationalities Peoples Region ) with a projected population of 168,867(Sodo Woreda Finance and Economic Development Office Data April 2013). Buee is Sodo Woreda Town located 103 km South - West of Addis Ababa on the high way of Alemgena - Butajira. The Woreda is situated between 1,500 meters and 3,300 meters above sea level with annual rainfall ranges from 900 mm to 1,400 mm.

**Program context:** ChildFund is the world's child development organizations over 75 years of history of serving deprived, excluded and vulnerable children works on programs that support children to be healthy, educated, skilled and involved to change their world. ChildFund started operating in Ethiopia in 1971 and currently operates with 13 local partners in SNNPR, Oromia, Amhara Regions and Addis Ababa city administration reaching over 40,000 children and 30,000 families directly and over 1 million community members indirectly. ChildFund Ethiopia supports the target group with its programs from infancy, toddlerhood and adolescence to young adults. The different phases of the growing up child's life are reached through three core program focus areas as described below:

1. **Early Childhood Development Program (0-5 years old- life stage I)** In order to promote healthy and protected infants, the program focuses on promoting safe pregnancy and newborn health, integrated community management to prevent childhood diseases and malnutrition, and early childhood support.
2. **Basic Education Program (6-14 years-life stage II).** In this phase, special attention is paid to a good education in a protected environment. ChildFund's goal of basic education program is to support children to develop their potential, enjoy good health, access quality educational opportunities, have positive relationships with peers and adults, grow up in families who care for and protect them, and to be encouraged by their communities to engage meaningfully in changes that affect them. The program has three domains<sup>1</sup> of change.
3. **Youth Development Program (15-24 Years – Life stage III).**The young people aged between 15 and 24 are to be further qualified in such a way that they will soon be able to provide for their own livelihood and lead their own lives independently. Particular attention is also paid to sexual awareness

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<sup>1</sup> Based on ChildFund the three domains of changes for children between 6-4 are: 1. Children and Young Adolescents Have Positive Relationships in Supportive Homes and Communities. 2. Children and Young Adolescents Have Literacy, Numeracy and Critical Life Skills to Make Health Decisions and 3. Children and Young Adolescents Are Healthy and Are Active in Community Life.

and reproductive health, as well as to promoting the social commitment of young people in their village communities.

This study is therefore; aimed to measure the impact of ChildFund's basic education program on the academic performance of grade nine students in Buee secondary and Preparatory school enrolled and attending their education in the academic years 2017/2018.

## **1.2. Statement of the Problem**

Education is a sound investment that is expected to enhance economic growth of individuals and the society. However; disappointingly, this important sector is faced with myriad of problems. Prominent problem area that brings to light the poor show of the sector is the abysmal performance of students in secondary school. The woeful performance in secondary school has been a source of worry to parents and other stakeholders in the sector considering the resources parents and government invest in educating the learners.

Ethiopia including SNNP Regional state shares in this predicament of the education sector. The identified causes of the problem in SNNP were low family income, poor awareness of families for education, early marriage, inadequacy of instructional skills, poor commitment, and motivation of teachers, poor school management, weak parental follow up, school distance and poor attention to basic education programs (ChildFund Area Strategic Document, 2014).

In response to the above problem and the unhidden evidence that basic education programs influenced academic achievement has motivated the development of a number of basic education programs by development practitioners and the government in the country. More recently, ChildFund has been designed and implemented age appropriate supports in basic education programs to support children develop their potential, enjoy good health, access quality educational opportunities, have positive relationships with peers and adults, grow up in families who care for and protect them, and to be encouraged by their communities to engage meaningfully in changes that affect them. ChildFund works to contribute to prevent poor show of student's educational outcomes and low levels of intellectual functioning that are found in disadvantaged children between the ages of 6-14 from 2010 to 2017 in the study area.

Though many writers have argued for the multifaceted advantages of basic education programs, there are few studies in Ethiopia and the argument in Ethiopia is not sufficiently supported with empirical

evidences. Evidence based research provides information for policy makers and practitioners so as to give due emphasis to improve educational outcomes. The purpose of this study, therefore, is to critically look at the impact of attending in ChildFund's basic education programs on the academic performance of grade 9 students in Buee Town, Sodo Woreda, Gurage Zone of SNNP Region. In clear terms, the study intends to find out whether there would be a difference between the performance of students with ChildFund's basic education programs experience and those without it. Moreover; this study will help to provide insight to further research works.

### **1.3. Objective of the Study**

#### **1.3.1. General Objective**

The general objective of this study is to investigate the effects of ChildFund's basic education program on the academic achievement of students in Buee Town.

#### **1.3.2. Specific Objectives**

Specifically this study will provide knowledge on the following specific objectives:

1. To analyze the effect of basic education program on students' academic performance.
2. To identify students' based factors influencing academic performance
3. To assess home based factors influencing academic performance of students.
4. To evaluate school environment based factors influencing academic performance.

### **1.4. Research Questions**

- i. To what extent does basic education have effect on student's academic performance?
- ii. What factors hampers students' academic performance in Buee Town?
- iii. How does the environment in the homes influence students' academic performance?
- iv. How does the school environment influence students' academic performance?

### **1.5. Research Hypotheses**

1. There is no significant difference between the academic performance of students with and those without basic education program experience.
2. There is no significant difference between academic performance and student based factors.
3. There is no significant difference between academic performance and home based factors.

4. There is no significant difference between academic performance and school based factors.

### **1.6. Expected Outcome**

The expected result will reveal a statistically significant mean difference between students with and without ChildFund's basic education experience favoring the former. ChildFund's basic education program has statistically significant association with students' academic performance.

### **1.7. Scope of the Study**

This study will be conducted on the impact of ChildFund basic education program on academic performance of grade nine students in one of the 13 districts that ChildFund operates. The study will not address the effect of early childhood development program and youth development programs due to the time and budget constraints.

### **1.8. Limitation of the Study**

To come up with unbiased findings and conclusion some factors may be expected to affect the research such as shortage of research materials conducted on the area under study, perception of government stakeholders, implementers, parents, teachers and students in the study area.

### **1.9. Organization/Structure of the Report**

The final report of this paper will be consisting of the following major parts. The first chapter of report will introduce the project work, its approach, rationale of the selection of the project theme, objectives, research methodology with brief description of methods adopted for data collection and analysis. Related literature review on basic education programme, students' academic performance and economic models of impact analysis will enrich the text of the literature under the title "Related Literature Review". In the second chapter and onwards the main body of the project work will be included. The report will conclude the major texts in the report and forwards its policy recommendation in the last section. Front and back matters of the report will include introductory linkages and supplementary items to complement the main section of the report.

## **2. RESEARCH METHODOLOGY**

### **2.1. Research Design and Approach**

This study will try to investigate the impact of ChildFund's basic education program on academic performance, within the study area. To obtain appropriate information the investigator will use cross-sectional research design. Further, a quantitative approach will be used to assess the data at hand. The study will be carried out between February and April 2018.

### **2.2. Data Sources and Methods of Data Collection**

#### **2.2.1. Types and sources of data**

Both primary and secondary data types will be used to this study. The data in this paper will come from a survey that will be carried out in 2018. While the survey in part will be relied on student grade cards/school rosters – especially for some of the control variables – the study will be able to use records and rely on multiple sources of information for the two key variables—the grades of the students (the measure of academic performance) and the participation status of the students that they attended in from grade five to eight.

#### **2.2.2. Sampling design and techniques**

The sampling strategy will employ both purposive and random sampling. One out of four secondary and preparatory schools in the Woreda will be selected purposively and then a random sampling technique will be employed to select sample students from the selected secondary and preparatory school in the program area. The sample students will be randomly selected from a population of 589 secondary school students in Buee secondary and preparatory school that were enrolled in the ninth grade during the 2017–2018 academic years. In total, the size of the sample includes 120 students and their families which is around 20% of the sample population.

#### **2.2.3. Data collection method**

To evaluate whether ChildFund's basic education program is improving the education quality, as it is intended to, this study will measure education quality by student performance on academic tests, as do many other empirical studies about the effect of policies on educational outcomes. In this paper, the study

will focus on grade nine students' first semester scores; the scores for this class are based on a single school that is standardized across the students.

In addition to questions about academic performance and basic education participation, other questions will be prepared and asked to create variables to control for other observed factors that might be expected to affect academic performance of each student. The first includes the following student-level characteristics: gender, age, birth order, whether or not they were student cadres (class monitors, club leaders) etc. The second include characteristics on students' parents and family: the total number of household members, the educational attainment of each parent, and the household's income level and holdings of land and non-land assets. Finally, a set of questions will be asked to collect information about characteristics of each student's school and his/her teachers.

## **2.3. Method of Data Analysis**

### **2.3.1. Descriptive statistics**

Descriptive statistics is important to have clear picture of the characteristics of the sample units. By applying descriptive statistics, one can compare and contrast different categories of the sample units with respect to the desired characteristics. The descriptive statistics going to be used in this study include mean, standard deviation, percentages and frequency of occurrence. Chi-square and t- tests will be used to test for the significance of the discrete and continuous variables, respectively.

### **2.3.2. Inferential statistics**

The purpose of this paper is to investigate the impact of basic education program on grade nine students' academic performance using the propensity score matching estimation technique.

#### **2.3.2.1. The evaluation problem**

In order to estimate the impact of basic education program on an outcome "Y" such as test scores for the student who attended ChildFund's basic education program, one would ideally need to compare the average test score of these students to the average test score that these same students would have achieved had they not attended ChildFund's basic education program. However, since a given student either attends basic education program or does not, the average test score that basic education program participant students would have achieved had they not attended basic education program remains an unobserved counterfactual. The evaluation problem consists in providing unbiased estimates of this average



counterfactual through the use of appropriate methods. A well-known methodology for conducting this type of analysis that is used extensively in impact evaluations is the propensity score matching technique of Rosembaum and Rubin (1983), in which a match is artificially constructed for each one of the individuals studied who have identical characteristics but one difference: participation or non-participation in the basic education program. Hence, this paper will employ propensity score matching technique in data analysis.

### **2.3.2.2. Propensity Score Matching (PSM)**

One can use the propensity score matching (PSM) model to address the data with sample selection problem associated with participation in basic education programmes. In this section, an explanation is given for this methodology. The sample selection problem may crop up from (1) self-selection where the students' parents themselves decide whether or not to participate in ChildFund's basic education programmes, which depends on observable and unobservable students and household characteristics, and/or (2) endogenous program placement where those who implement basic education programmes select (a group of) students and households with specific characteristics (e.g. high poverty rates). Statistical matching, such as PSM and the instrumental variable (IV) model could be used to compensate for sample selection bias or the endogeneity associated with students access to basic education programmes. Statistical matching has been widely used in social science studies. This involves first specifying a function matching the proximity of one student to another in terms of students and household characteristics and then grouping students so as to minimize the distance between matched cases. The merits of using statistical matching over instrumental variable (IV) estimation include; the former does not assume linearity: it is valid even though distributions of explanatory variables of treatment and control groups overlap relatively little, and it does not require a valid instrument. Rosenbaum and Rubin (1983) proposed statistical matching using the propensity score, the predicted probability that an individual receives the treatment of interest (e.g. basic education services in our case) to make comparisons between individuals with the treatment and those without. While there are some advantages in using PSM to estimate the impact of policy, the derived impact depends on the variables used for matching and the quantity and quality of available data and the procedure to eliminate any sample selection bias is based on observables. If there are important unobservable variables in the model, the bias is likely to remain uncorrected. For example, if the selection bias based on unobservable counteracts that based on observables, then eliminating only the latter bias may increase aggregate bias, although replication studies

comparing non-experimental evaluations, such as PSM, with experiments for the same programs do not appear to have found such an example in practice (Ibid).

### 2.3.2.3. The evaluation procedure

To examine the effect of ChildFund’s basic education program on the academic performance of students, the evaluation exploits cross-sectional dimension of variation that comes from comparing students from program and non-program schools. Thus, the sample students need to be divided into treatment group and a comparison (control) group. Students from ChildFund’s basic education program can be considered as the treatment and the students from non-basic education program as the comparison group. With this setup, the study will employ a propensity score matching technique to compare the outcomes (i.e., academic performance) for students whose primary schools were under ChildFund’s basic education program (participant students) to students whose primary schools were not under ChildFund’s program during the same period (non-participant students). Use of the matching methodology is justified by the fact that there is no way to track the academic achievement of an individual student in both scenarios (with ChildFund’s basic education programme and without it) over the same period of time. Therefore; matching provides a way to artificially compare achievement in both scenarios using the following model:

$$Y_i = \alpha + dED_i + bX_i + e_i, \quad (1)$$

Where,  $\alpha$  is any constant,  $i$  is an index for the student  $i$ ,  $Y_i$  is the first semester average result of student  $i$  in 2018;  $ED_i$  are the treatment variable (which make  $d$  the parameter of interest). Finally,  $X_i$  is a vector of covariates that are included to capture the characteristics of students, parents and schools while  $e_i$  is the error terms. The estimation methods for propensity score matching is summarized below.

The propensity score is the conditional probability of receiving a treatment (or of having access to ChildFund’s basic education programme) given student, school and household level characteristics,  $X$ .

$$P(X) = Pr \{D = 1 / X\} = E \{D / X\} \quad (2)$$

where  $D=\{0, 1\}$  is the binary variable indicating whether a student had participated to ChildFund’s basic education programme (1) or not (0) and  $X$  is the multidimensional vector of student, school and household characteristics or time-invariant or relatively stable characteristics in our context. It was shown by Rosenbaun and Rubin (1983) that if exposure to basic education programme is random within cells defined by  $X$ , it is also random within cells defined by  $p(X)$  or the propensity score.

The policy effect of basic education programme can be estimated in the same way as:

$$\begin{aligned}
\tau &= E\{Y_{1i} - Y_{i0}/D_i = 1\} \\
&= \{E\{Y_{1i} - Y_{i0}/D = 1, P(X_i)\}\} \quad (3) \\
&= E\{E\{Y_{1i}/D_i = 1, P(X_i)\} - E\{Y_{0i}/D_i = 0, P(X_i)\}/D_i = 1\}
\end{aligned}$$

where  $i$  denote the  $i$ -th student,  $Y_{1i}$  is the potential outcome (academic performance captured by 1<sup>st</sup> semester grade nine average score) in the two situations with access to ChildFund's basic education programme and without. So the first line of the equation states that the policy effect is defined as the expectation of the difference between the academic performance of the  $i^{\text{th}}$  student with access to basic education programme and that of similar student without access to basic education programme. The second line is the same as the first except that the expected policy effect is defined over the distribution of the propensity score. The last line is the policy effect as the expected difference of the expected academic performance score for the  $i^{\text{th}}$  student with access to basic education programme given the distribution of the probability of accessing basic education programme and that for the student without basic education programme given the same distribution. Formally, the following two hypotheses are needed to derive (3) given (2).

**Lemma 1:** Balancing Hypothesis (Balancing of student, school and household variables given the propensity score).

If  $p(X)$  is the propensity score, then  $D \perp X/p(X)$ . This implies that, given a specific probability of having access to ChildFund's basic education programme, a vector of student, school and household characteristics,  $X$ , is orthogonal to (or uncorrelated to) access to ChildFund's basic education programme. In other words, for a specific propensity score, ChildFund's basic education programme is randomly distributed and thus on average students with ChildFund's basic education programme access and those without are observationally identical (given a propensity score). Otherwise, one cannot statistically match students of different categories.

**Lemma 2:** Unconfoundedness given the propensity score

If treatment (or whether a student had access to ChildFund's basic education programme) is confounded, i.e.,

$$Y_1, Y_2 \perp D | X$$

Then, assignment to treatment is unconfounded given the propensity score, *i.e.*

$$Y_1, Y_2 \perp D | P(X)$$

The latter implies that, given a propensity score, the academic performance are uncorrelated to access to ChildFund’s basic education programme. If the above lemmas are satisfied, the policy effect can be estimated by the procedures described in Becker and Ichino (2002) and Smith and Todd (2005). Each procedure involves estimating a probit or logit model:

$$Pr\{D_i = 1/X\} = \Phi(h(X_i)) \quad (4)$$

where  $\Phi$  denotes the logistic (or normal) cumulative distribution function (cdf) and  $h(X_i)$  is a starting specification. We use the probit model whereby whether a student had access to ChildFund’s basic education programme is estimated by student, school and household characteristics. One possible procedure for statistical matching is Stratification Matching whereby the sample is split into  $k$  equally spaced intervals of the propensity score to ensure that within each interval the average propensity scores of treated and control students do not differ. Stratification Matching requires observations to be discarded when either treated or control units are absent. There are also other matching variants in matching estimators of the average effect of treatment on the treated, namely, Nearest Neighbor matching and Kernel Matching. Nearest Neighbor Matching involves taking each treated unit and searching for the control unit with the closest propensity score, while with Kernel Matching all those treated are matched with a weighted average of all controls with weights that are inversely proportional to the distance between the propensity scores of treated and controls. This technique is, however; dependent on having the right data as it relies on over sampling program beneficiaries during the fielding of a larger survey and then “matching” them to a comparison group selected from the larger core sample of the overall effort, often a national household survey (Ibid). According to Rosenbaum and Rubin (1985) in recent years there have been substantial advances in propensity score matching techniques (cited in World Bank (1999): Handbook for practitioners prepared for evaluating the poverty impact of projects). This method is very appealing to evaluators with time constraints and working without the benefit of baseline data given that it can be used with a single cross-section of data(Ibid).

## WORK PLAN AND COST ANALYSIS

### a. Work Plan

S/n	List of Major Activities	Time Table (Month and Years)												
		Jan	Feb	Mar	Apr	May	Jun	July	August	Sept	Oct	Nov	Dec	
1	Developing the Proposal	2018											2017	2017
2	Proposal Submission		2018											
3	Developing data collection instruments		2018											
4	Field work			2018										
5	Data analysis, discussion and conclusion				2018	2018								
6	Final thesis submission					2018								

### b. Cost Analysis

S. N.	Tasks	Measurement	Amount	In ETB	In USD(\$)
1.	Stationary & related costs	Pcs	Various	5,000.00	181
2.	Transport expense	Distance	Various	1,500.00	54
3.	Per diem for enumerators	Person	6*15 days*300 ETB	13,500.00	490
4.	Per diem for enumerators (training session)	Person	6*1 day*550 ETB	3,300.00	120
5.	Data Input & Editors	Person	1*10 days * 600 ETB	6,000.00	218
6.	Contingency		2,930 ETB	2,930.00	106
<b>Total</b>				32,230.00	1169

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