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Explaining the "Explained": An Examination of the Gender-Based Education Gap in India and its Impact on the Wage Gap

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EXPLAINING THE "EXPLAINED": AN EXAMINATION OF THE GENDER-BASED EDUCATION GAP IN INDIA AND ITS IMPACT ON THE WAGE GAP

SUBMITTED TO

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Abstract

Analysis of the National Sample Survey Data from 2011-2012 shows that a gender-based education gap exists. Women are more likely than men to be illiterate. Some parents continue to view household duties as more important than education in the case of girls, causing some to drop out in primary and middle school, which leads to lower experience accumulation. However, females are almost equally as likely as males to be enrolled in school, and an equal proportion of males and females earn higher education degrees. More importantly, the difference in resource allocation seems to be minimal. Although education has a strong, positive impact on wages, returns to education for women are lower than those for men. This is taken into account by parents when making education decisions for their children. As a result, the wage gap appears to be a cause and effect of the education gap.

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Introduction

In the US, women make 77 cents for every dollar men make (Forbes, 2013). Is that indicative of discrimination? It is tempting to say yes. However, women are less likely to have received the same amount of education as men. If then, we assume that all women have only high school degrees and all men have college degrees, the 23 cents extra might be justified. However, this leads to a deeper question, and one which remains largely unexplored: why are women less educated than men?

The issue of the gender based wage gap has received considerable attention in academia. The gender based wage gap is the difference in the average wages received by men compared with those received by women. The wage gap can be divided into the explained and unexplained components. Traditional wage studies have focused on the unexplained component of the wage gap, otherwise known as wage discrimination. That is, if a female has the same education, experience, major and occupation as a male, what gives rise to the wage gap? However, there also exists a gap in education, experience, choice of major, and choice of occupation between men and women. What factors influence parents' decisions to send their sons to school but not their daughters? How much of the education and major gap can be explained? In controlling for all the factors, present wage models deem the discriminatory effects that are inherent in each coefficient as explained. Instead, these variables could also have a discriminatory component. In this paper, I attempt to study the education gap in India, and how it effects the gender based wage gap.

There are many culturally sensitive factors that are relevant to this study. In some societies, there is a proven preference for sons over daughters. India is one such society (Gupta et al., 2003). Consequently, although this study is exclusive to India, findings may be extrapolated to other countries with similar gender differences.

Besides education, discriminatory practices are also prevalent in healthcare, division of domestic responsibilities, and decision-making. However, given the difficulties with reliable data related to healthcare and decision-making, this study focuses exclusively on education and domestic duties. A literature review encompasses the scholarly work done on the education and wage gap, their discriminatory components, and the relations between them– both internationally and in India. In order to understand the study, a summary of the data and its limitations is presented. Next, the methodology used is explained and applied to the data for an empirical analysis. Then, a decomposition of the education gap is done. Finally, the findings are summarized in the conclusion.

Literature Review

Reasons for Global Wage Discrimination

Blau and Kahn (2000) write that the causes for wage gaps can be divided into two groups: inherent differences between males and females, and working culture discrimination. The first reason is not discriminatory, as it can be explained by other factors. In scholarly work, one of the foremost reasons for the wage gap, then, is that women commit less time to work than their male counterparts. Blau and Kahn (2000) note that this leads to a lower accumulation of experience for women. As a result, they often lack the necessary skills to make significant progress in the workplace. Additionally, because many women prioritize family over their careers, their working productivity is lower than that of men (Becker, 1985). Blau and Kahn further note that women choose occupations, such as clerical and administrative occupations, that pay less than the occupations chosen by their male counterparts. These can be categorized as explained components of the wage gap.

Oftentimes, employers may also perceive women to be less committed to their work and more to their families (Correll et al., 2007). This negative stereotype could influence both the wages and working conditions for females. This would be considered as the unexplained, or discriminatory, component of the wage gap.

Wood, Corcoran and Courant (1993) tested to see the effect of discrimination on wages, and found that after controlling for grades, work history, hours worked, family status and type of employers, female lawyers made less than male lawyers. This reflects the wage discrimination component of the wage gap. Perhaps the most telling of this

discrimination is the symphony experiment conducted by Goldin and Rouse (2000). They conducted a blind auditions for symphony orchestras by placing a screen between the candidates and judges. They found that if the judges did not know the gender of the candidate, they were more likely to select a female candidate than they were if they knew the gender. They estimated that the adoption of blind auditions has led to a 25% to 46% of the increase in women members of the best orchestras in the United States.

Blau and Kahn (2000) analyzed the female to male wage ratios from 1978 to 1998, segregating the population on the basis of age. They observed a negative correlation between age and wage ratios. That is, they found that as a woman becomes older, the gap between her wages and that of her male counterparts increases. This could be because women are likely to have taken time off for childbearing. Moreover, on comparing average female wages for time t and time t+10 years, Blau and Kahn (2000) found that the wage gap increases for women aged 18-34 years, and then declines for 34-54 years. This was consistent across different countries, including India.

Wage Discrimination in India

The wage difference between males and females is also prevalent in India. Agarwal (2011) estimated that female hourly wages are 38% lower than those of males in 2010. Many of the factors that lead to the wage gap in India are similar to those in the US and other Western countries. Bhalla and Kaur (2009) examine the education and wage gap by industry in India and find a non-linear relationship. For agricultural workers, the female to male education gap is 2.1 years, with a wage ratio of 66.3. In manufacturing, however, there is a 2.5 years education gap, but the wage ratio is lower at 55.2. The

construction and services industries have the lowest education gap at 0.8 years, with the highest wage ratio at 71.9. They concluded that on adjusting for education and child bearing, there only exists a 13 percent level of average wage discrimination in female wages. Here again, in controlling for education, the education gap is not considered discriminatory but explained.

However, Bhalla and Kaur (2009) write that gender discrimination in India starts at birth. Because of the male preference prevalent in India, girls often do not receive education and/or adequate nutrition. This, in turn, leads to reduced productivity and lower wages.

Gender Discrimination

Gender discrimination is the lesser treatment of an individual because of his/her sex. Most often, the individual is a woman. There is significant evidence for gender discrimination in India. India currently ranks 136th on the Gender Inequality Index. Although the Pre-Conception and Pre-Natal Diagnostic Techniques Act of 1994 banned sex determination test, female feticide continues to be practiced. As a result, the sex ratio in 2011 was 940 females to every 1000 males, up from 933 females to every 1000 males in 2001.[1] Literacy levels, too, vary by gender. The female to male adult literacy rate was 68% in 2011 (UNICEF).

[1]India defines and calculates the sex ratio differently than other countries. In India, the sex ratio is the number of females per thousand males. Internationally, the sex ratio is

Gender discrimination is usually practiced in the allocation of resources between sons and daughters, but can manifest itself in many ways. For unmarried girls, it is most often found in education, nutrition, and the division of domestic duties. Zimmerman (2012) finds that in India gender discrimination for unmarried girls, measured on the basis of resource allocation, is present for 5-9 year olds, and increases for 15-19 year olds.

Studies specific to India have found that a positive correlation exists between education and wages. Duaisamy (2002) noted that higher levels of education increased the likelihood of entering wage employment. Strauss and Thomas (1998) also found that the health of the individuals impacts their wages. However, there is little reliable information on this relationship. As a result, this study focuses on differences in educational enrolment and attainment between males and females.

Education Policy

The Government of India has adopted many programs to ensure universal education for all. In 2000, the government allowed 100% foreign direct investment (FDI) in education in order to meet the targets set by the Millennium Development Goals, also signed in 2000. The 100% FDI allowed foreign companies to set up exclusive institutions in India, without having to partner with an Indian company. In 2002, the government introduced the Sarva Shiksha Abhiya (SSA), or “Education For All” campaign, which

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calculated as the number of males per one hundred females. Thus, a decline in the sex ratio in India means fewer women to men.

aims to provide primary education to all. It mandated the opening of schools in areas that did not currently have them, expanded and improved teacher training, and focused on technical education. At the same time, it amended the constitution to make universal primary education a right of every child. The Indian government labeled the 11th Fifth Year Plan as its Education Plan, and pledged to increase public spending on education to 6% of GDP by 2012. [2] However, public spending on education, as a percentage of GDP, declined from 4.3% in 1999 to 3.4% in 2009.

In 2005, the government announced extra measures to promote education for the girl child, specifically the single girl child. A single girl child is defined by the Indian government as a girl with no siblings (University Grants Commission, 2008). These measures included free education for all girls until grade 12, and merit scholarships for those pursuing undergraduate and postgraduate degrees. There are additional education-related financial incentives provided to single girl child, or those girls that have sisters but no brothers.

Education Gap

There are two oft-cited reasons for the education gap. First, the labor market rewards for women's education are lower than that for men's education. Thus, women have a lesser incentive to get educated as they accrue fewer benefits from their education.

[2]The Government of India formulates economic and social policy in the form of five year plans. These plans are developed by the Planning Commission, headed by the Prime Minister and the Chief of the Planning Commission. The 12th Plan started in 2012, and is set to expire in 2017.

Second, parents prefer the welfare of their sons to the welfare of their daughters. This is because they benefit from their sons' educational returns while the daughters' educational returns benefit the in-laws, but not the parents. The latter reason is only true for patriarchal societies, such as India, where it is assumed that the daughter will move in with her in-laws after marriage.

Filmer (2000) studied the relationship between females' educational attainment and wealth. He found that in India, an interaction of gender and wealth showed a large disadvantage for poor females. Furthermore, the probability of being enrolled in school was 14 percentage points higher for 6 - 14 year old Indian males than females.

Education in India is classified on the basis of the grade of study and is left to the discretion of the state government to decide what grades compose primary school versus middle school. Most states classify education as follows: primary school is grades one through five, middle school is grades six through eight, secondary is grades nine and ten, and senior secondary is grades 11 and 12. Non-technical undergraduate degrees are three years while technical undergraduate degrees require four years. Post-graduate, non-PhD degrees are one year long. PhD degrees take, on average, four years after a post-graduate degree.

Kingdon and Theopold (2002) found that schooling decisions are impacted by the economic returns to education. Kingdon (1995) also studied the determinants of educational attainment in India using a 1995 survey in the state of Uttar Pradesh. She found that the parental background, both in terms of years of education and type of work,

household wealth, quality of primary school, and age at marriage impacted the education attainment of women most critically.

Kingdon and Unni (1998) conducted a similar study in 1998 using NSS data. Their study focused on two states exclusively, Tamil Nadu and Madhya Pradesh. They found that returns to education for females were higher at 10% per additional year of education, than for males, which was 8% per additional year of education. Thus, they concluded that although wage discrimination is rampant in India, returns to education have little effect on it. There finding were consistent with Duraisamy's findings; he found that the returns to women's education was higher than that of men's at the middle, secondary and senior secondary levels (Duraisamy 2002). As such, the education gap in India is a result of differential treatment of sons and daughters by parents and not differential returns.

Kingdon also found that bad health as a child was a significant deterrent to enrolment in school for boys, but not for girls. That is, disabled girls were more likely than disabled boys to be enrolled in school. She attributed this to the fact that parents are more responsive to the health conditions of their sons but not of their daughters (Kingdon 1998). In general, however, household and parental characteristics, such as education of parents and household wealth, yielded higher results for women than men. Thus, a girl born in a rich family, to educated parents, was more likely to enroll than a girl from a less affluent background and/or with illiterate parents.

Finally, Kingdon (2002) concluded that 25% of the education gap, or 0.172 years, was explained by the women lacking certain characteristics. The other 75%, or 0.512

years, was discriminatory. She hypothesized that the latter was a result of the strong preference for sons, and/or lower expected economic outcomes to girls' education (Kingdon 2002).

Educational Discrimination and the Wage Gap

Although wage discrimination exists in India, it is not because of the education gap. The higher returns to women's education offsets the disadvantage that women face because of their inferior education. Returns to education are positively correlated with education level; the returns are higher for a PhD holder than for someone with a high school degree.

The Data

The data used in this study is from Employment and Unemployment component of the National Sample Survey's (NSS) sixty-eighth round. The Ministry of Statistics and Programme Implementation (MOSPI) of the Government of India is responsible for conducting the survey and reporting the results.

Coverage

The survey covers all of India, except parts that were inaccessible due to arduous field conditions. The data was collected between July 2011 and June 2012. In order to ensure consistency through the time period, the sample was divided into four sub-rounds with each sub-round surveyed for the duration of three months. An equal number of households made up each survey. The survey followed a two stage stratified sampling procedure. In the first stage, villages and urban blocks are selected with a probability proportional to their population. The population was determined in accordance with the 2001 national population census. In the second stage, the households within these villages and blocks were picked. Households were arranged on the basis of primary occupation, and further classified on the basis of area of land held for rural households and monthly per capita expenditure for urban households. This ensured representation across all wealth categories. The households were selected by using a simple random sample without replacement.

The survey is a quinquennial survey, conducted every five years. Although data from 1983 was available, I chose to do a cross sectional study. This is for three reasons:

(1) the households surveyed were not constant over time and therefore a panel study would be inconsistent; (2) India only liberalized its economy in 1991 then underwent many changes, and I dropped the pre-1991 data to avoid biases related to the economic liberalizations; and (3) the quinquennial survey has been modified each iteration of its conduction and questions have been tweaked to reflect changing conditions. To ensure consistency, I have only based my study on the 2011 – 2012 data.

Format

The Employment and Unemployment survey is a household survey of 101,724 households. A household is defined as a group of people normally living together, as determined by the head of the household. The survey includes household specific information, such as land owned, monthly expenditure, and size. Additionally, it includes individual specific variables, such as education, work and wage data for each family member. The total number of individuals in the survey is 495,016. The survey is directed at the head of the household and every individual family member's relation to the head is provided. The final dataset binds together nine different blocks that make up the survey. These blocks each focus on a different aspect – from household characteristics, to wages, and monthly expenditure.

In the analysis of factors impacting enrollment, I have limited my sample to the children of the head of the house, married or unmarried. This is because I want to study the relationship between parents' education and presence of siblings and gender discrimination. Furthermore, I have limited the sample to children of the head of the household, married or unmarried, between the ages of six years and 60 years, to exclude

discriminations and biases arising from other conditions. The sample, then, includes 167,803 individuals from 74,433 households.

However, in the attainment of education section, I have expanded my sample to include spouses of married children, along with the children of the head of the household. The age ranges from 14 years to 60 years, but only includes those that have completed their education. According to the Indian Child Labour (Prohibition and Regulation) Act of 1986, persons above the age of 14 years are legally allowed to work; working children below 14 years are considered to be child laborers. Therefore, 14 years would be the logical lower bound. The legal retirement age in India is 60 years, and that is the upper age bound of the sample. Thus, my sample is restricted to 133,309 individuals from 55,744 households.

The survey lists the primary and, if applicable, secondary paid activity that each individual is involved in. In my sample, only 200 individuals were engaged in more than activity. In order to ensure consistency, I have only looked at the primary occupation of each member, that is the one in which the individual spends a majority of his/her time.

Finally, 315 households included heads who practiced polygamy. In such cases, I was unable to correctly identify the mother-child relationship and therefore dropped the observations.

Data Limitations

Although the sample surveyed is extremely extensive, it excludes certain groups of people. In particular, prisoners, hospital patients, foreign nationals, military and

paramilitary forces residing in barracks, and citizens living in orphanages, rescue homes and old age homes are not included in the sample surveyed. Furthermore, the sample does not incorporate those living in hard to reach places.

Furthermore, the household head may use his/her discretion when including family members. Thus, children residing in hostels for academic purposes, or married children not living with parents, may not be included in the family. Thus, several variables such as the size of the household (hhsize) or the binary variable for siblings (sibling) may be underestimated. Furthermore, the sample only includes those living together. Thus, a married individual, who does not live with his/her parents, is considered as an independent household. Given the patriarchal nature of Indian society, sons and their wives generally continue to live with the parents of the son, while daughters move into the homes of their in laws. Because the study focuses exclusively on the children of household heads, the gender ratio is skewed more towards men.

Moreover, the data has been reformatted from the perspective of the head of the household to the perspective of the child of the head of the family. As a result, relationships maybe distorted. For example, the underlying assumption is that the head of the family or the spouse of the head of the family (whichever if female) is the mother of the child, and the other is the father of the child. However, there could be cases where that is not true, for example in the spouse is the stepmother and not the biological mother. Thus, the impact of variables such as years of education of the mother (maeduyr) and father (faeduyr) maybe over or under estimated, if the education years of the biological mother and the mother listed in the survey vary. Furthermore, the variable siblings, only

considers children of the head of the household. However, in many households, cousins may live together and have the same impact on individuals as siblings would. This would also lead to an underestimation of the effect of siblings on individuals.

Another important limitation of the data is that it provides only a cross-sectional view. Thus, impact of certain variables may be hard to assess. For example, the variable for education spending (eduspend) only provides an estimate of educational spending in 2011-2012. Thus, it does not necessarily capture the impact of a family with working children who do not incur significant education expenses now, but did when the children were in school or college. Similarly, disability is only assessed in the present; the model does not differentiate for when the disability was developed. As such, a disability may still impact education even if the disability was developed after the individual completed his/her education.

Finally, the survey coded education as the final degree completed by the individual. I have converted the code to number of years of education. Thus, an individual who completed high school but did not attend college, and another individual who dropped out of college after completing only two years, will both have the same number of years of education. Furthermore, primary school may be until grade four or five depending on the region. For the purpose of this study, I have assumed all primary schools include grade five. Therefore, years of education may also be underestimated or overestimated.

Methodology and Variable Specification

In order to better understand the gender-based education gap, education has been disaggregated into two components: enrollment and attainment. In previous studies, scholars have often isolated enrollment. This is because statistical models do not differentiate between observations with zero years of education, and observations that did not specify years of education. That is, the study then only focuses on those that have attained at least a minimal level of education, which could be a self-selected group. However, in the current sample, only 380 of the 194,932 individuals, or 0.2% of the observations, did not provide education information. Those observations were dropped from the sample.

The reason for the disaggregation, then, is to distinguish between societal norms and resource allocation. If society condemns female education, a family is unlikely to send their daughter to school at all. On the other hand, if a family faces financial difficulties, they are more likely to remove their daughter from school.

Here on, the term respondent is used to denote the individual observation.

Enrollment

The dependent variable for enrolment is a binary (enroll), which takes the value of one if the individual has ever enrolled in any formal school, irrespective of the age at enrollment or the duration of enrollment. An analysis is done for all respondents collectively, and then is also broken down by gender.

The independent variables can be divided into individual and household. Individual variables include the age, in number of years, of the individual (age) and a binary that take the value of one if the respondent is currently disabled (disabled).

The household variables include years of education of the mother (maeduyr) and father (faeduyr). There is also a binary that equals one if the respondent has one or more siblings (sibling). Finally, the amount of land owned by the household (lando), in hectares, acts as a proxy for wealth. The model also controls for caste and religion, with binaries that take the value of one if the respondent belongs to a backward caste (lowcaste), or is a Muslim (muslim).[3] The definitions of all variables can be found in Table 1. The binary variable for individuals with a working mother is included in the list but not in the regression for enrollment. This is because the data is static and only provides information if the mother is currently working, not when the children were enrolling in school. Thus, it is difficult to gauge the effect it had on the enrollment of the child.

Since the dependent variable is a binary variable, a logistic regression model is used. The decision to enroll in school will be positive only if the benefits from education, B, exceed or are equal to the costs associated with education, C. That is, an individual will enroll only when $B \geq C$. Thus, this can be modeled in the form of the following equation, where N is the net benefit:

[3]Historically disadvantaged social groups include Schedule Castes, Scheduled Tribes and the Other Backward Castes (OBC).

N = B – C

Since N is dependent on a number of variables, say X, which includes all variables $X_1 \ldots X_n$, the equation can be expressed as:

$$N_i = \gamma X_i + E_i$$

Here, γ is the vector of coefficients and E_i is the standard error. The logit function, then, models the probability of N=1, evaluated at $z = B_0 + B_1 X_{1i} + \ldots + B_k X_{ki}$.

Thus the probability equals,

$$\Pr(N = 1 | X_1 \ldots X_k) = F(B_0 + B_1 X_{1i} + \ldots + B_k X_{ki}) = \frac{1}{1 + e^{-(B_0 + B_1 X_{1i} + \cdots + B_k X_{ki})}}$$

Attainment

Traditionally, academics use the Heckman Correction when studying the factors influencing educational attainment. However, that is beyond the scope of this study. Instead, a simple Ordinary Least Squares (OLS) regression is used to model the differences. Thus,

$$Y_i = B_0 + B_1 X_{1i} + \ldots + B_k X_{ki} + u_i$$

Here, B_0 is the constant, B_i is the coefficient for the variableX_i, and u_i is the standard error. Given the large sample size, extremely high significance levels have been selected. The t statistic can be calculated using the following formula, where $\bar{Y}$ is the

mean for the population; $\mu_Y$is the mean for the sample; S_Y is the standard deviation for the population; and, n is the sample size:

$$t = \frac{\bar{Y} - \mu_Y}{\frac{S_Y}{\sqrt{n}}}$$

$$t = \frac{\bar{Y} - \mu_Y}{S_Y} . \sqrt{n}$$

Thus, even the smallest difference between the population and sample mean will be amplified by the large n. All regressions have heteroskedastic robust standard errors.

The dependent variable for attainment is the number of years of education completed by the individual (eduyr). The model continues to control for all of the dependent variables controlled for in enrollment, except for the education of parents. Since the sample has been expanded to include daughter-in-laws and son-in-laws, the data for parents' education is not available, and instead the education of the in-laws is available. The maiden and married family may have extremely different situations, and so the variables have been dropped altogether from this analysis. Additionally, this model includes a proxy for the quality of education and the allocation of resources. In India, private schools are considered to be of higher quality than public schools. Furthermore, private schools have a certain cost to parents, unlike public schools, which are supposed to be fee-free. Regional or local governance bodies or cantonment boards can run the public school. A private organization or individual manages a private school, but the school may receive partial or complete funding from the government. Thus, the binary variable that equals one if the school is private (private), indicates better quality.

Resource Allocation: Education Spending

In order to determine the allocation of resources within a family, an analysis of quality of institution and additional training programs that the respondents are enrolled in is conducted. This is done in the context of the monthly household educational expenditure, as a percentage of the household's total monthly budget (eduspend), an indication of how much the family prioritizes education. A greater spending would imply that the family spends more of its resources on education, and therefore believes it to be of more importance. A segmented analysis is done for those spending below the average monthly education spending (6.04% of the total household expenditure), and those spending below. Monthly educational expenditure includes school and additional tutoring fees, and newspaper, library, stationary, and Internet charges. The analysis is done by looking at the proportion of the sample enrolled in these programs. The quality of institutions is assessed by its public/private affiliations, while the additional training programs could be vocational training and/or placement agency. The binary takes a value of one if the individual underwent any formal vocational training (voctrain). The survey defines vocational training as a structured program, which focuses on hands on skills development to prepare an individual for a specific occupation.

A decomposition of field of training is also done separately, but is not included in the regression. Artisanal skill development focused on embroidery, knitting, weaving and tanning, while technical skills involved information technology software and hardware repair skill development, as well as agriculture chemicals and electrical work.

Mechanical skill development encompassed auto-related repair work. A detailed classification of fields can be found in the Appendix.

A second binary (placagency) takes a value of one if the individual is currently enrolled at a placement agency. The agency may be private, government approved or otherwise, or government run.

Wage

A regression of the natural log of wages is conducted against individual and household factors. Individual factors include the years of education (eduyr), and enrollment in vocational training (voctrain) and placement agency (placagency). The household variables include monthly educational spending as a percentage of total expenditure (eduspend), religion (muslim), and caste (lowcaste).

Wages were calculated on a daily basis, including wages paid in kind and cash. Although annual estimates of wages are specified below, annual wages are difficult to calculate. This is because the survey provides information for a week, and there may be a lot of variability on the number of days worked, which is not specified.

Additionally, the model controls for the accumulated experience, using the Mincerian formula. Experience is calculated as follows:

$$experience = age - eduyr - 5$$

Although not entirely accurate, the experience estimates that number of years that a person has worked. The inherent assumption, which may not always hold true, is that an

individual enters school at age five[4], and enters the workforce on completion of education. As such, the model ignores time taken of childbearing or time spent looking for a job. The square of experience is also controlled for. The squared variable indicates the age at which an observation is likely to receive the highest wage (experience2).

[4] In India, like the United States, students enter first grade when they are six years of age. However, that is a recent development – until the early 1990s, students entered first grade at age five. Thus, the experience variable has been calculated from age five, not six.

Table 1: Description of Variables

Variable	Description
Dummy Variables	
default = 0; equals one if:	
lowcaste	Respondent is a scheduled caste, scheduled tribe or other backward caste
muslim	Respondent is a Muslim
private	Respondent's school is/was privately owned, irrespective of government aiding
voctrain	Respondent received any vocational training
placagency	Respondent has registered with any placement agency, currently or in the past
sibling	Respondent has one or more siblings
enroll	Respondent has enrolled in some school, irrespective of age at enrollment
disabled	Respondent is disabled
Other Variables	
in years, unless otherwise specified	
age	Age of respondent
eduyr	Final degree completed by respondent
maeduyr	Respondent's mother's education
faeduyr	Respondent's father's education
wage	Daily wage of respondent, *in Rupees*
lnwage	Natural log of daily wages of respondent
experience	Respondent's estimated experience, *in years*
experience2	Square of respondent's estimated experience, *in years*
hhsize	Number of members in the respondent's household
eduspend	Education expenditure as a percent of respondent's monthly household expenditure
lando	Land owned by respondent's family, in hectares

Note: In India, historically disadvantaged castes receive special benefits in the form of reservations in institutes of higher learning and government jobs. Consequently, they may have different returns to education. In this study, all disadvantaged groups have been grouped together.

Results

Enrollment

Table 2: Summary Statistics for Enrollment, 6-60 years

Variable	All		Non-Enrolled		Enrolled	
	Mean	SD	Mean	SD	Mean	SD
Females						
enroll*	0.94	0.24	0.00	0.00	1.00	0.00
faeduyr	6.76	5.16	2.84	4.20	7.02	5.12
maeduyr	4.48	4.78	1.32	3.12	4.69	4.80
age	15.07	6.66	15.33	9.65	15.05	6.40
disabled*	0.00	0.07	0.05	0.21	0.00	0.04
lando	0.64	1.52	0.54	1.41	0.64	1.53
hhsize	5.61	1.96	6.25	2.38	5.56	1.92
muslim*	0.18	0.38	0.29	0.45	0.17	0.37
lowcaste*	0.71	0.45	0.78	0.42	0.70	0.46
sibling*	0.93	0.25	0.93	0.26	0.93	0.25
N	62,092		3,959		58,133	
Males						
enroll*	0.95	0.23	0.00	0.00	1.00	0.00
faeduyr	6.32	5.16	2.20	3.91	6.55	5.12
maeduyr	3.90	4.59	1.11	2.95	4.06	4.61
age	19.56	9.39	19.88	11.32	19.54	9.27
disabled*	0.01	0.08	0.05	0.22	0.00	0.06
lando	0.78	1.84	0.64	1.66	0.79	1.85
hhsize	5.82	2.43	6.61	3.02	5.78	2.39
muslim*	0.16	0.37	0.27	0.45	0.16	0.36
lowcaste*	0.69	0.46	0.78	0.42	0.69	0.46
sibling*	0.87	0.34	0.88	0.32	0.87	0.34
N	105,711		5,694		100,017	

Note: An asterisk symbol next to a variable name signifies that the variable is a binary. For these variables, means represent the proportion of the sample that meets the condition. For example, a mean of 0.16 for Muslim males means that 16% of the observations in this sample identified as Muslims.

The mean enrollment rates for women and men are high and nearly equal, with a difference of 0.01. A large difference in mean years of education of fathers and mothers exists between enrolled and non-enrolled respondents, for both males and females. This is fairly intuitive; illiterate or semi-literate parents are more likely to make lower wages, thus less likely to be able to afford sending their children to school. At the same time, the mean years of education of parents of females were higher than that of males, irrespective of whether they were enrolled or not. This can be explained by the fact that more literate parents are less likely to practice female feticide or infanticide (Muthulakshmi, 1997). Men are also more likely to be disabled than women. This could be because men often engage in greater amount of physical activity and are therefore more likely to be injured. Another potential explanation is that parents are less likely to respond to the disabilities and illnesses of their daughters compared with those of their sons (Kingdon, 1998). It is also more likely for girls to have siblings compared with men. This could potentially be because the data is more skewed towards males as married daughters are largely missing from the sample. However, in this sample, families with boys on average have 2.99 children, compared with 3.36 for families with daughters. Parents of daughters, then, probably desire a son and have more children as a result.

The logit model shows that after controlling for caste and religion, women are still less likely to enroll in school. However, the difference in enrollment rates is minimal. Expectedly, there is a negative correlation between enrollment and disabled, muslim and lowcaste, for both females and males. Muslims and lower castes may have different returns to education, explaining the negative correlation. Interestingly, however, females are less likely to enroll in school if they are disabled than males. This is not consistent

with Kingdon's findings, which supposed that parents heed their daughters' disabilities less than their sons' disabilities (Kingdon, 1998). They remain important factors even after controlling for parents' educational background.

Table 3: Logit Model of Enrollment

Variable	Females		Males	
	Coefficient	t-value	Coefficient	t-value
intercept	1.63	12.57***	2.30	25.86***
faeduyr	0.13	21.27***	0.18	30.21***
maeduyr	0.12	13.92***	0.08	10.20***
age	0.03	6.59***	0.01	5.15***
disabled	-3.79	-17.82***	-3.28	-24.41***
lando	0.01	0.57	0.02	1.75
muslim	-0.59	-12.10***	-0.64	-16.15***
lowcaste	-0.35	-6.55***	-0.35	-8.19***
sibling	0.19	1.95	-0.06	-1.08
N	49,373		83,361	
Pseudo R^2	0.1347		0.1364	
Probability of enrollment	0.966		0.973	

Notes: Because this is a logit model, the magnitude of the coefficients cannot be interpreted but the sign of the coefficient signifies the direction of the relationship.
For z values, *, **, and *** represent significance at the 5% (1.96), 1% (2.58) and 0.1% (3.29) percent confidence levels respectively, at maximum degrees of freedom (converging to z values).

Both variables, land owned by the family and having siblings, were statistically insignificant at the five percent level. In this study, land owned is a proxy for wealth. In 1999, the Public Report on Basic Education (PROBE) found that even "free schooling" cost Rs. 318 per year in rural Northern India (Kingdon, 1998).[5] Thus, this shows that wealth is no longer an important determinant of enrollment, and illustrates the positive impact that the increased focus on providing universal education free of cost could have had. However, it could also be that land owned is a weak proxy for wealth, given that Indian households may have a lot of land holdings but not much liquid wealth. Finally, the probability of enrollment, estimated at the means, was 96.6% for females compared with 97.3% for males.

Table 4: Reasons For Not Enrolling in School, 6-29 years

Reason	Female		Male	
	Number	Percent	Number	Percent
School too far	98	3.9	114	3.4
To supplement household income	182	7.3	992	29.9
Education not considered necessary	669	26.7	811	24.4
To attend to domestic chores	452	18.1	119	3.6
Others	1,101	44.0	1,284	38.7
Total	2,502	100	3,320	100

[5] To put this number into perspective, this would be 13.33 days of work for an agricultural laborer in 2011. Given India's average family size of five, with three school going children, this would translate to 40 days of labor (Kingdon, 1998).

The respondents' reasons for not enrolling are provided in table 4. Apart from other reasons, males were more likely to not enroll because they had to support their families financially or their families did not consider education to be necessary. A similar percentage of girls were not enrolled because their families did not consider education necessary. However, girls were more likely to not enroll to attend to household chores. Thus, parents prioritized household duties over education for girls, but not boys. This disparity leads to lower accumulation of relevant experience for women, and later reflects on the wage gap.

Attainment

Table 5: Summary Statistics for Years of Education, 14-60 years

Variable	Females		Males	
	Mean	SD	Mean	SD
eduyr	8.10	0.03	9.31	0.03
age	26.11	7.43	27.35	7.82
disabled*	0.01	0.08	0.01	0.10
voctrain	0.04	0.2	0.05	0.23
placagency	0.11	0.32	0.15	0.36
private*	0.22	0.41	0.22	0.41
eduspend	6.26	6.31	6.04	6.20
lando	1.02	2.23	0.92	2.12
hhsize	6.85	2.96	6.46	2.90
sibling*	0.34	0.48	0.79	0.41
muslim*	0.16	0.37	0.16	0.37
lowcaste*	0.67	0.47	0.70	0.47
N	38,573		48,799	

Note: An asterisk symbol next to a variable name signifies that the variable is a binary. For these variables, means represent the proportion of the sample that meets the condition. For example, a mean of 0.16 for Muslim males means that 16% of the observations in this sample identified as Muslims.

Expectedly, the mean years of education is higher for males at 9.31 years than females, at 8.10 years. An equal proportion of males and females attended private schools, were disabled, and identified as Muslims. However, a significantly lower proportion of females had siblings. There seems to be no explanation for the large gap between males and females for whether they have siblings. It is possibly a result of the underestimation of wages. The education spending for families with daughters was higher

than that with female, potentially because the costs – opportunity or otherwise – associated with educating a girl child is higher.

A breakdown of education level is given in Table 6. The percentage of women who received advanced degrees (certificate/diplomas, graduates or post graduates) is the same as men. 14% of women are illiterate; that is one in every 7 Indian women. This can be compared with 8% of the men who are illiterate, or two in every 25 males. Given that women were almost as likely as men to enroll in school, this could be as a result of dropping out very soon after starting. Note that this survey reports the level of schooling completed rather than attended. The main gap, then, occurs in pre-primary, primary, middle and secondary school. 59% of the women completed primary, middle or secondary school, compared with 65% of the men.

Table 6: Breakdown of Education Level, 14-60 years

Educational level	**Female**		**Male**	
	Number	Percent	Number	Percent
Not literate	3,754	14	2,503	8
Literate without schooling	77	0.3	65	0.2
Literate with formal schooling				
Below primary	1,938	7	2,304	7
Primary	3,585	13	4,513	14
Middle	5,995	22	8,025	26
Secondary	4,633	17	5,570	18
Higher secondary	3,543	13	3,873	12
Diploma/ certificate course	362	1	804	3
Graduate	2,599	9	3,030	10
Post-graduate and above	881	3	772	2
Total	27,367	100	31,459	100

The regression yielded similar results as enrollment regressions. All variables, except land owned (lando) were statistically significant at the 99.9% level; land owned was significant at the 95% confidence level. This could be because many Indian families have landed wealth but not liquid wealth. The land owned is, thus, a weak proxy for household wealth. Being disabled, a Muslim, and/or belonging to a lower caste was all negatively correlated with the years of education. However, a girl was likely to have 6.17 fewer years of education if she were disabled, compared with 4.94 fewer years for males. This is in contrast to Kingdon's findings, which stated that parents were less likely to respond to their daughters' illnesses, in comparison with their sons' illnesses (Kingdon, 1998). However, girls who identified as a low caste were more likely to suffer than men, with a decrease in 1.4 years of education. This could be indicate that men have made better use of the job reservations for lower castes, see higher returns on education, and therefore have increased investment in education, as compared with women.

Table 7: Regression of Years of Education, 14 - 60 years

Variable	Females		Males	
	Coefficient	t-value	Coefficient	t-value
intercept	3.87	16.94***	2.12	10.45***
age	0.21	22.31***	0.30	35.06***
eduspend	0.16	21.72***	0.12	22.58***
technical	5.16	40.18***	4.30	49.82***
disabled	-6.17	-12.30***	-4.94	-12.81***
lando	-0.04	-2.13*	0.09	5.72***
lowcaste	-1.40	-17.40***	-0.91	-12.50***
muslim	-1.56	-15.47***	-1.44	-17.12***
N	12,911		12,701	
R^2	0.177		0.2553	

Notes:
For t values, *, **, and *** represent significance at the five (1.96), one (2.58) and point one (3.29) percent confidence levels respectively, at maximum degrees of freedom (converging to z values).

A ten year age increase resulted in 2.1 more years of education for girls, but 3 years more for boys. This can be explained by the fact that girls get married at a younger age than boys. The monthly education expenditure as a percentage of the total expenditure (eduspend) was also positively correlated for males and females. A 10-percentage point increase in education spending resulted in a 1.6 years increase in education for females, compared with 1.2 years for males. Thus, educational resources had higher returns for females. Technical education also resulted in a greater gain in years of education for females than males. If a woman had studied (or is currently studying) a technical subject, she had 5.16 years of education more than if she did not

have a technical degree. For males, this amounted to 4.30 years of increased education in case of a technical degree. Given that technical education requires 3-5 years and is only pursued by those committed to education and meeting at least a minimum threshold of skill, this seems reasonable.

This model explained 26% of the variation in years of education for males and 18% of the variation for females. Further analysis should include age of marriage and time spent daily on non-education tasks, among others.

Table 8: Reasons For Dropping Out of School, 6-29 years

Reason	Female		Male	
	Number	Percent	Number	Percent
School too far	316	1.3	188	0.6
To supplement household income	3,206	13.4	19,341	66.6
Education not considered necessary	2,450	10.2	2,114	7.3
To attend to domestic chores	11,479	47.8	977	3.4
Others	6,549	27.3	6,440	22.2
Total	24,000	100	29,060	100.0

It is also interesting to consider the factors that led women and men to drop out from school, given that they had enrolled in school at some point in time. Nearly one half of the females who dropped out did so because they needed to attend to household duties. On the other hand, two thirds of the males dropped out because they needed to help supplement the household income. Thus, even if they dropped out, they accumulated experience, a factor that is often positively correlated with wages. Given the enrollment statistics, this shows that parents continue to prioritize domestic duties over education for

their daughters. Yet, they only pull their sons out if it is necessary for the survival of the family. The reasons for dropping out are summarized in Table 8.

Education Spending

Table 9: Institution Type, 14-29 years

Institution Type	Female		Male	
	Number	Percent	Number	Percent
Public School	45,343	86.4	61,344	86.5
Private School	7,151	13.6	9,572	13.5
Total Enrolled	52,494	100	70,916	100

Private schools are those managed by a private individual or organization; it may or may not receive government funding. Public schools are managed by the government, a local body affiliated with the government, or a government agency (for example, the military services).

Average education spending is similar for males and females. Although Kingdon (1998) found that parents were more likely to practice asymmetric resource allocation by enrolling their sons in private schools and daughters in public schools, there was no indication of that in this sample. In fact, women were slightly more likely than men to be enrolled in private school, with 13.6% of women attending private school versus 13.5% of men.

Table 10 (a): Vocational Training Enrollment by Education Spending, 15-60 years

Formal Vocational Training	Female		Male	
	Number	Percent	Number	Percent
eduspend > 6.4	24,251	100	32,314	100
Enrolled	1,141	5	1,893	6
Not enrolled	23,110	95	30,421	94
eduspend< 6.4	14,322	100	16,485	100
Enrolled	509	4	737	4
Not enrolled	13,813	96	15,748	96
Total	38,573		48,799	

Table 10 (b): Field of Vocational Training, 15-60 years

Field of Training	Female		Male	
	Number	Percent	Number	Percent
Technical	477	29	1,353	52
Art	536	33	93	4
Agriculture	4	0	23	1
Health & Nursing	165	10	128	5
Business	81	5	82	3
Mechanical	20	1	650	25
Beauty and Salon	134	8	1	0
Hospitality	10	1	66	3
Education	37	2	4	0
Journalism	3	0	16	1
Others	180	11	203	8
Total	1,647		2,619	

Equal percentages of males and females were enrolled in vocational training, irrespective of the family's education spending. However, a closer inspection of the field of training shows greater disparity between the genders. Women were most likely to have trained in artisanal (33%) or technical (29%) skills, followed by health and nursing (10%) and beauty and salon (8%). Men, almost exclusively, enrolled in technical (52%) or mechanical training (25%). Although the cost associated with vocational training is not

available, length and qualifications required for certain training programs is listed in the Appendix. In general, technical jobs required 24 months of training, compared to 12 months for artisanal training. Furthermore, technical program required a background in science and math, and successful completion of secondary school. Artisanal programs required no specific background and completion of middle school. Therefore, one can assume that technical training will also have higher associated costs.

Table 11: Placement Agency Enrollment by Education Spending, 14-60 years

Placement Agency	**Female**		**Male**	
	Number	Percent	Number	Percent
eduspend > 6.4	23,437	100	31,230	100
Enrolled	2,931	13	4,947	16
Not enrolled	20,506	87	26,283	84
eduspend< 6.4	13,897	100	15,831	100
Enrolled	1,328	10	2,068	13
Not enrolled	12,569	90	13,763	87
Total	37,334		47,061	

More men, in families with above-average and below-average educational spending, had enrolled with a placement agency than women. There seems to be no explanation for this besides women are less likely to be looking for work than men are. However, the difference of enrollment is three percentage points, and given the low absolute number of men and women enrolling at a placement agency, the impact is likely to be minimal.

Wage

Table 12: Summary Statistics for Wages, 14-60 years

Variable	Females		Males	
	Mean	SD	Mean	SD
wage	21.87	27.59	24.50	25.60
lnwage	2.65	0.86	2.92	0.70
N	38,572		48,792	

Women make 11% less than their male counterparts, when controlling for personal and household conditions. This is similar to Bhalla and Kaur's (2009) finding of a 13% wage gap. On average, women made 21.87 Rupees per day or 7,982.55 Rupees per year. Men, on average, earned 24.50 Rupees per day or 8,942.5 Rupees per year. [6] This may be lower than documented average wages because the sample is limited to the children of household heads, who are younger and therefore more likely to have lower wages. Average experience is the same for males and females. This could be because the sample size if fairly

[6] The 2011-2012 fiscal year average exchange rate of 1 United States Dollar (USD) was 47.92 Indian Rupees (INR). Note that India's fiscal year ran from April 1, 2011 to March 31, 2012 while the survey period was July 1, 2011 to June 30, 2012.

Table 13: Regression of Wages, 14 - 60 years

Variable	Females		Males	
	Coefficient	t-value	Coefficient	t-value
intercept	1.28	16.39***	1.61	49.35***
eduyr	0.10	23.81***	0.09	46.9***
experience	0.05	7.07***	0.05	18.26***
experience2	-0.0007	-3.78***	-0.0008	-9.05***
voctrain	-0.03	-2.30*	0.00	-0.65
placagency	-0.05	-1.13	-0.06	-2.88**
eduspend	0.01	3.35***	0.01	7.24***
muslim	0.00	0.05	0.11	6.64***
lowcaste	0.01	0.19	-0.07	-4.89***
N	2,027		8,557	
R^2	0.31		0.3131	

Notes:
For t values, *, **, and *** represent significance at the five (1.96), one (2.58) and point one (3.29) percent confidence levels respectively, at maximum degrees of freedom (converging to z values).

Unlike previous regressions, gender-based wage regressions are impacted by different factors, as evident by the different variables that are statistically significant for males and females. For women, one additional year of education results in a 10%, or 798 Rupee, increase in wages. For men, a 10% increase in wages is achieved in 0.87 additional years of education. Thus, returns to education are higher for males than females, contrary to the findings of Bhalla and Kaur (2009), Kingdon(1998), and others. Experience, on the other hand, has higher returns for females than males. 0.46 additional years of experience leads to a 10% increase in wages for women; for men, 0.55 years is required. Scholars have written that women are often penalized because employers perceive that they are less committed to their work, and more to family (Correll, 2007).

The higher return, then, can possibly be explained by the fact that experience reveres that perception. However, women are significantly older when they reach the zenith of their wage career, at 35.7 years, compared with 31.25 years for men. This may be because the time they may take off for childbearing reduces their tenure or accumulated experience.

Education Decomposition

Finally, the explained and unexplained components of education are examined. The Oaxaca-Blinder technique (1973) is used for this purpose. Let the mean years of education males (m) and females (f) be $\bar{Y}_m$ and $\bar{Y}_f$ respectively. Then, their years of education can be given by the following function:

$\bar{Y}_i = \hat{B}_i \bar{X}_i$ where i can take on values = f, m

$\bar{X}_i$ then is the mean values of the independent variables, while $\hat{B}_i$ is the coefficient of each independent variable. The two are different because men and women have different returns on investment, disability, and other determinants of education (the explained component, E) and because of existing discrimination, D.

The education gap (G) can be calculated as the difference in the mean years of education of men and women, or

$$G = \bar{Y}_m - \bar{Y}_f$$

$$G = \hat{B}_m \bar{X}_m - \hat{B}_f \bar{X}_f$$

In order to compare the wages, the equations must be standardized by either male means or female means. A holistic understanding requires that both standardizations be done, since the decomposition could be sensitive to the index chosen. These are presented below.

Male Means Standardization

Multiplying both sides by $\bar{X}_m$

$$G = \{\bar{X}_m(\hat{B}_m - \hat{B}_f)\} + \{\hat{B}_m(\bar{X}_m - \bar{X}_f)\}$$

$$G = D + E$$

Female Means Standardization

Multiplying both sides by $\bar{X}_f$

$$G = \{\bar{X}_f(\hat{B}_m - \hat{B}_f)\} + \{\hat{B}_f(\bar{X}_m - \bar{X}_f)\}$$

$$G = D + E$$

Results

An application of the Blinder (1973), Oaxaca (1973) decomposition on the number of years of education shows that women would have 1.21 years of additional education if they had the same characteristics as men. Of this, however, only 0.07 years, or 6%, is explained and 1.14 years is unexplained. This is possibly because women are as likely as men to enroll in school, attend private school, and get higher degrees, and yet their mean years of schooling is lower than that of men. Then, the discrimination then is most likely because of omitted variables such as choice of subject area, age at marriage, allocation of time to education versus other duties, and the prevalent son preference of parents.

Conclusion

This data suggests that the education gap in India still exists. However, the future looks promising. Girls were almost equally likely as boys to be enrolled in schools, as likely to achieve a graduate degree, and more likely to be enrolled in private school. Yet, gender disparities persist. Women were nearly twice as likely as men to be enrolled, and a significant number dropped out in primary and middle school. Girls were more likely than boys to be pulled out of school while still relatively young, but if allowed to stay on, they were likely to face decreased discrimination. This has wide implications for government policy. The government should look at providing incentives, such as the mid-day meal scheme, for girls to stay at school. Currently, government scholarships target those pursuing higher degrees (undergraduate and graduate), and the high percentage of women achieving those degrees indicates that the programs have been a success.

A 1.14 year education gap is still present. Of this, only 6% is explained. The large unexplained component is partly due to an omitted variable bias; choice of major, cost of education, and employment rates would all impact decisions of education. However, discriminatory societal practices also lead to a large unexplained part. Women tend to get married at a younger age, and are often prohibited from working.

In order to combat early drop out, then, policy must aim to change the mindset regarding education in comparison with domestic duties, as well as ensure that the school and household schedule do not overlap. Girls were most likely to be pulled out of school so as to help with household duties. From this, it can be inferred that parents believe household duties provide greater returns than education for females. Schools can offer

more flexible hours, allowing a girl to complete household duties and then head to school. Also, the government should fund public campaigns that elaborate on the benefits of education over household duties.

Differential patterns in education and other factors have large implications on the wage gap. India currently has an 11% wage gap, holding factors such as education and experience constant. Education and experience are both strongly correlated with wages, and are highly statistically significant. Staying home for a period of time in order to attend to household chores also impacts years of experience negatively, as it leads in minimal professional skill development.

The different choice in majors also results in lower wages. Women were more likely to enroll in art-related training, as compared with men, who enrolled in technical training. Given that the required time and skill for technical skill development was higher, returns to technical training would also be greater.

However, lower wages also resulted in lower returns to education for females, and consequently, lower mean years of education. The wage gap is, then, both a cause and effect of the education gap. Given that female literacy has a far reaching impact on society, irrespective of wages, the government should continue an aggressive female education campaign to get more girls to school.

Finally, further analysis in the intra-household allocation of resources, choice of majors by gender, and effect of marriages should be done so as to minimize the omitted variable bias.

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Appendix 1: Length of Select Vocational Programs

Course Name	Duration (in months)	Requisite Qualification
Advance welding	12	8th standard passed
Book binder	12	8th standard passed
Carpentry	12	7th standard passed
Cutting & sewing	12	8th standard passed
Embroidery & needle work	12	8th standard passed
Fashion design	12	10th standard passed
Fitter	24	10th standard passed
Surveyor	24	10th standard passed with Science & Maths
Telephone operator cum receptonist	12	10th standard passed
Sanitary hardware fitter	6	8th standard passed
Tourist guide	6	12th standard passed
Dental laboratory technician	24	10th standard passed and typing speed of 30 WPM in English / Hindi / any local language
Tool & die maker	36	10th standard passed with Science & Maths
Handicraft	12	7th standard passed
Hosiery & knitting	12	7th standard passed
Short term computer courses (data entry operator)	3	10th standard passed with English
Short term computer courses (desk top publishing operator)	3	10th standard passed with English
Medical transcription	6	12th standard passed with Biology/ Physiology as major subject. Knowledge of English Language is essential.
Mechanic watch & clock	12	10th standard passed

Appendix 2: Field of Vocational Training Grouping

Technical	**Art**
Drilling	Fabric painting and printing
Blacksmith	Knitting
Upholster	Tanning
Audio-visual technician	Bleaching, dyeing and calico printing
Electrician	Embroidery
Data entry operator	Pottery making
Office assistant	Dance
Computer repair	Music-vocal and instrumental
Construction worker	
Mason	**Agriculture**
Building maintenance	Food preservation
Candle making	Medicinal and aromatic plant industry
Agriculture chemicals	Plant protection
	Dairying
Hospitality	Fish farming
Food processing	Sericulture
Housekeeping	Poultry farming
Steward	
Tour operator	**Health & Nursing**
	Sanitary inspector
Business	Medical laboratory assistant
Accounting and auditing	Nursing
Tax assistant	
Receptionist	**Mechanic**
	Auto mechanic
Beauty& Salon	Repairer
Beautician	Driver
Barber	
Hair dresser	**Education**
	Child care
Others	Pre-play school management
Call center assistant	Preschool & creche management
Finance	
Marketing	**Journalism**
Gardening	Mass communication