

# The Skewed Representations of Genders in Karnataka Board Textbooks : A Quantitative Investigation

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## Abstract

*Abstract - Gender neutrality in textbooks and education is extremely important in inculcating values of gender equality in a future society. This paper proposes a method to quantify the representation of males and females in State Board Textbooks of India. The disparity in representation of males and females in these textbooks is found in the Karnataka Board textbooks of India. Alongside, a survey was conducted to gauge the gender biases clearly prevalent.*

## INTRODUCTION

Gender biases and perceptions often form in children at a young age of around 6-7 years old, just as they enter primary school. [5]. Hence, primary education plays a key role in the values and beliefs of a future society [6],

making inculcating values of gender equality into their education system a necessity. Currently, the Karnataka Board textbooks have a great disparity in the representation of males and females. The number of illustrations featuring males versus females, the number of stories with a male versus a female protagonist, and the roles each gender are cast in have led to a clear and quantitative indication of the lack of gender inclusivity and equality within the textbooks themselves. If education is what forms the foundation of a future society [7], it is of dire importance to ensure that the textbooks encourage students to build beliefs and values of gender equality. Textbooks should tarnish the ideas that often lead to, not only biases, but also the building of roles that cement in

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[5] [Study shows gender bias at an early age](#)

[6] [Role of Primary Education in Development | Essay Help](#)

[7] <https://www.educationworld.in/the-importance-of-school-education-in-child-development/>

children's minds and affect the paths and careers they choose for themselves[8]. They build a social construct early on, which could deeply affect the choices they make for themselves in the future [9]. To ensure that there is equal opportunity and belief in the potential of each gender in the future, the Karnataka Board textbooks must be changed. This paper investigates this issue of the unequal representation of each gender in Karnataka Board textbooks, and also illustrates the detrimental effects that this problem has had on the mindsets of those who received their primary education through the Karnataka Board.

### **3. RESEARCH METHODOLOGY**

This investigation consists of two parts: primary data and secondary data.

#### **3.1 Primary Data**

A survey/ questionnaire approach was used to gauge into, and compare, the gender biases of those who received primary education from the Karnataka Board and those who received primary education from other schooling boards (CBSE, ICSE, NCERT, IGCSE, IB). Surveys are an effective way to get first hand opinions from respondents.

The data for the survey for the sample of those who studied in the Karnataka Board was collected by visiting schools which have students who gained primary education from the Karnataka Board . The schools that were chosen were across the state of Bangalore to ensure that the data was not biased to a particular region. This was an attempt to portray how a common mindset prevails through several regions and areas that have one thing in common : the education system. Through this attempt to avoid a sampling bias, an accurate inference from the data can be drawn. This anonymous survey was conducted at the schools by handing out hard copies. A translator accompanied us to ensure that the respondents could comprehend the questions to their best ability. The responses were recorded and the data collected was then logged into the tool, Google Forms, from which its analysis has been conducted. We collected data from a sample size of 248 students in these schools. This large sample size minimizes chances of sampling biases.

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[8][Getting in early to avoid gender stereotyping careers](#)

[9] [International Day of the Girl 2018: How Gender Affects Boys and Girls](#)

The survey for those studying in CBSE, ICSE, NCERT, IGCSE and IB. was conducted by sending a Google Forms link of the survey to these school's and to those who have had this background of primary education (via email and messaging platforms, such as Whatsapp). The data from a sample size of 245 respondents collected was then analysed.

A precautionary step while doing the primary data collection was to conceal the survey's purpose. By revealing the purpose, respondents tend to make conscious answers and attempts to be unbiased, a phenomenon known as Hawthorne Effect [10], which is against the survey's role to measure their subconscious, unfiltered and innate thought process caused due to their primary education background. Hence, while conducting the survey, we had to be extremely prudent as to not indicate its purpose in any way. This was done by not revealing the purpose explicitly, explaining that this survey aims to "analyse the Karnataka Board textbooks".

Along with the details of data collection, it is important to note the formulation of the survey[11] and its questions. A drawback of

this method is that it does not account for the several other factors that could affect the mindset of students (such as socio-economic backgrounds, religion, etc.). This survey comprises questions that attempt to detect a gender bias in terms of the way respondents perceive the roles and careers played by each gender. They were asked to choose an "ideal image" pertaining to a career or a role, out of a few options. These options contained one of each gender, making sure that the clothing, posture, body language, expression and the overall mise-en-scene of the images were analogous and appropriate for the role. These factors were ideally control variables, as they maximise the fact that an option was chosen solely due to the gender of the character within it. The respondents were also given the chance to choose "Both of the above" or "None of the above", giving them the choice to remain neutral and unbiased too. Through the varied choice, the survey was able to provide respondents with a chance to submit their opinion freely. One free-response question also asked the respondent about what career they want to pursue as a child. This was to analyze how the education board affected what men and women thought they

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[10] <https://catalogofbias.org/biases/hawthorne-effect/>

[11] <https://forms.gle/7WUkgEJRsiYiukdZHA>

were capable of, and what roles they choose for themselves.

Education is a process which aims at biological, psychological, social and moral development of a human being, who is a member of the society (Thornburg, 1984). Hence, it is a known fact that education plays a key role in development.

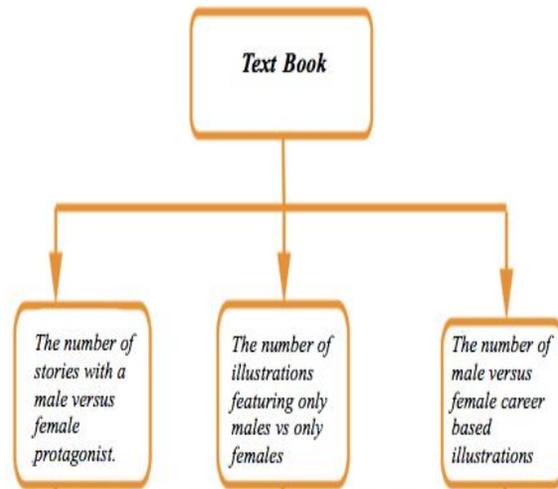
All the data was entered into GoogleForms, through which data analysis was conducted. The charts and tables obtained allow for discussions on the results, as explored later.

### 3.2 Secondary Data

The secondary data was taken directly from the Karnataka Board textbooks from grades 1 to 5. The English Language textbooks were used for this study. This used a content analysis methodology.

Data was collected according to the three parameters seen in Figure 3.2. This quantitative counting was done by multiple researchers, and cross-checked to ensure that the readings are accurate. The data shows a clear trend of a lack of representation of females in all the 3 parameters for the chosen books.

Figure 3.2



The stepwise data collection procedure followed was:

1. Selection of appropriate textbooks, done after literature review.
2. Thorough reading of online resources and the textbooks to formulate parameters for analysis.
3. Using the parameters as tools to devise the quantitative representation of each gender in the chosen textbooks.
4. Tabulating the data based on each parameter
5. For parameter (3), the careers seen in that textbook are listed and the count

[10] <https://catalogofbias.org/biases/hawthorne-effect/>

[11] <https://forms.gle/7WUkgEJRsiYiukdZHA>

of the number of males and females in that career are recorded.

6. Repeating with other data collectors.

The data seen in Tables 3.21, 3.22 and 3.33 in the appendix show the raw, secondary data collected in a tabular form.

This method of data collection by counting is prone to human error. However, this is rectified in this research by using multiple data collectors and doing repeats. The chances of error can be reduced by distributing the data collection among more researchers and conducting more repeats.

The parameters were formulated after thorough studying of the books and doing a literature review. The main goal of these parameters is to quantify an otherwise abstract idea of gender inequality in State Board textbooks.

By gaining quantitative values for each parameter, a mean value is taken to show the representation of males and females in Karnataka Board textbooks.

## 4. RESULTS

### 4.1 Primary data

Each multiple choice question provided options as mentioned in the methodology. Pie charts of the data are in the appendix. The most frequent answers are chosen for analysis. The free response question asks “what career did you want to pursue as a child”. This question attempts to gauge how each school board affects the career choices from a young age.

Table 4.11

	<i>Most frequent answer for primary education from CBSE, ICSE, etc. boards</i>	<i>Most frequent answer for primary education from the State board.</i>
<i>Assistant</i>	<i>Both of the above ⇒ 45.2%</i>	<i>Female ⇒ 83.6%</i>
<i>Nurse</i>	<i>Both of the above ⇒ 68.4%</i>	<i>Female ⇒ 82.7%</i>
<i>Business Leader</i>	<i>Both of the above ⇒ 52.8%</i>	<i>Male ⇒ 73.6%</i>
<i>Stay at home parent</i>	<i>Both of the above ⇒ 56.4%</i>	<i>Female ⇒ 76.4%</i>

Table 4.12

	<i>Most frequent answer for primary education from CBSE, ICSE, etc. boards</i>	
<i>Male</i>	<i>Scientist</i>	<i>Army</i>
<i>Female</i>	<i>Doctor</i>	<i>Teacher</i>

## 4.2 Secondary data

The secondary data collected, as seen in Table 4.21 shows that the representation of males and females is greatly disparate. The quantitative measures of each parameter allows a mean value to be derived of the representation of each gender. The pie chart shows this massive difference visually, of approximately only a fourth representation of females and three fourth representation of males.

Table 4.21

	<i>MALE</i>	<i>FEMALE</i>
<i>Total illustrations</i>	230	83
<i>Percentage illustrations</i>	73.48 %	26.52 %
<i>Total stories</i>	73	24
<i>Percentage stories</i>	75.26 %	25.74 %
<i>Total career</i>	55	18

<i>oriented illustrations</i>		
<i>Percentage career oriented illustrations</i>	75.34 %	24.66 %
<i>Mean percentage representation</i>	<u>74.69 %</u>	<u>25.31 %</u>

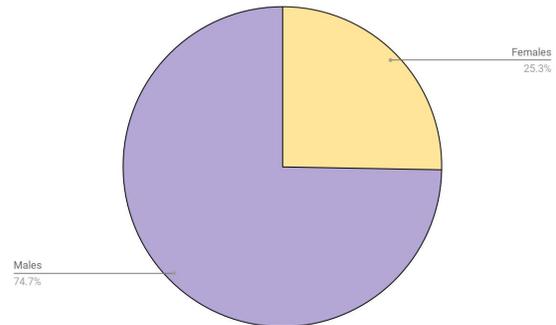


Figure 4.1

Table 4.22 depicts the most frequent career roles for males and females as seen in the Karnataka Board textbooks from Grades 1 to 5. These careers are prevalent across most of the textbooks. Other common careers include farmers ( 7 male, 1 female) and nurses ( 0 male, 3 female). In the discussion, a comparison between this statistic the gender biases prevailing in our society is drawn.

Table 4.22

<i>Most frequent careers</i>	<i>MALE</i>	<i>FEMALE</i>
<i>Teacher</i>	2 ⇒ 20%	8 ⇒ 80%
<i>Doctor</i>	8 ⇒ 80%	2 ⇒ 20%

## 5. Discussion

The secondary data collected shows a recurring pattern of “teachers” being represented the most as females. This is also reflected in the data from the free response questions of “what career did you want to pursue as a child”, as majority females who received primary education from the State Board opted for “teacher”. Males opted for “Army” the most in this free response question, which could be related to a qualitative observation as certain stories and poems praise army officers, always being portrayed as male. Furthermore, the data for this free-response question collected from those who received primary education from CBSE, ICSE, etc. boards were very varied, with myriad career choices chosen by both genders. . It is important to note that when females who received primary education from the State board who wished to express that they wanted to go into business entered in their career choice as “businessman”. This is representative of the lack of vocabulary within State Board textbooks, as students do not even have the chance to learn about ideas embedded within words such as “business

woman” or even “business person” which leads to gender stereotypes within careers.

The quantitative secondary data collected, according to the three parameters, shows an acute lack of representation of females within Karnataka State Board textbooks through the mean percentage representation of a mere 25%.

There is a clear lack of representation of females and males in several careers.

This has clearly had negative impacts on students, presented in the primary data. The questionnaire has procured clear, quantitative differences in the thinking process of those who received primary education from CBSE, ICSE, etc versus the State Board. Majority people who studied in primary school in CBSE, ICSE, etc boards chose “Both of the above” in all the questions, remaining neutral. However, the results from the State Board questionnaire, with the same questions, were very different. Most respondents chose options that conformed to stereotypical representations. The assistant as a female, business person as a male, nurse as a female and stay-at-home parent as a female are seen to be stereotypical roles that have cemented in the minds of this sample of respondents.

Hence, equating the secondary and primary data as having a cause and effect relationship, it is quite clear that the hypothesis of State Board textbooks having skewed representation of Males and Females is reflected in the data.

### 6. Further scope

This problem can extend to high school textbooks as well, and comparable studies can be performed in different states. There is also scope to discuss the lack of representation of transgender and same-sex couples in State Board textbooks. To rectify this issue, the State Government will need to facilitate changes to the textbooks used. AI and Machine learning can be used to tackle this problem by automating the process of quantifying gender representation. Image classification and natural language processing tools can be used.

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## APPENDIX

Number of illustrations

<u>Grade</u>	<u>Grade 1</u>	<u>Grade 2</u>	<u>Grade 3</u>	<u>Grade 4</u>	<u>Grade 5 (level 1)</u>	<u>Grade 5 (level 2)</u>
<u>Male</u>	74	49	51	27	20	9
<u>Female</u>	26	13	16	12	7	5

Table 3.21  
Number of stories

<u>Grade</u>	<u>Grade 1</u>	<u>Grade 2</u>	<u>Grade 3</u>	<u>Grade 4</u>	<u>Grade 5 (level 1)</u>	<u>Grade 5 (level 2)</u>
<u>Male</u>	7	14	17	14	11	10
<u>Female</u>	6	4	7	1	4	2

Table 3.22

Career based illustrations

	<b>CAREER</b>	<b>MALE</b>	<b>FEMALE</b>
<b>Grade 1</b>	<i>Doctor</i>	4	1
	<i>Teacher</i>	-	4
	<i>Carpenter</i>	1	-
	<i>Cobbler</i>	1	-
	<i>Farmer</i>	5	-
	<i>Painter</i>	2	-
	<i>Pilot</i>	2	-

Research topic

Publisher

	<i>Police officer</i>	-	2
	<i>Nurse</i>	-	2
	<i>Baker</i>	1	-
	<i>Carpenter</i>	1	-
	<i>Auto driver</i>	1	-
	<i>Mechanic</i>	2	-
	<i>Bus conductor</i>	1	-
	<i>Dentist</i>	1	-
	<i>Plumber</i>	1	-
	<i>Shopkeeper</i>	2	-
	<i>Firefighter</i>	3	-
	<i>Miller</i>	1	-
	<i>Weaver</i>	2	-
	<i>Potter</i>	1	-
	<i>Post officer</i>	-	1
	<i>Milkman</i>	2	-
	<i>Driver</i>	1	-
	<i>Dancer</i>	-	1
	<i>Cricketer</i>	2	-
	<b>TOTAL</b>	<b>37</b>	<b>11</b>

	<b>CAREER</b>	<b>MALE</b>	<b>FEMALE</b>
<b>Grade 2</b>	<i>Teacher</i>	1	2
	<i>Contractor</i>	1	-
	<i>Doctor</i>	1	-

Research topic

Publisher

	<i>Painter</i>	<i>1</i>	<i>-</i>
	<i>Driver</i>	<i>-</i>	<i>1</i>
<b>TOTAL</b>		<b>4</b>	<b>3</b>

<b>Grade 3</b>	<b>CAREER</b>	<b>MALE</b>	<b>FEMALE</b>
	<i>Teacher</i>	<i>-</i>	<i>2</i>
	<i>Pilot</i>	<i>1</i>	<i>-</i>
	<i>Chef</i>	<i>1</i>	<i>-</i>
	<i>Farmer</i>	<i>2</i>	<i>-</i>
<b>TOTAL</b>		<b>4</b>	<b>2</b>

<b>Grade 4</b>	<b>CAREER</b>	<b>MALE</b>	<b>FEMALE</b>
	<i>Teacher</i>	<i>1</i>	<i>2</i>
	<i>Police officer</i>	<i>2</i>	<i>-</i>
	<i>Doctor</i>	<i>3</i>	<i>1</i>
	<i>Nurse</i>	<i>-</i>	<i>1</i>
	<i>Farmer</i>	<i>-</i>	<i>1</i>
	<i>Auto driver</i>	<i>3</i>	<i>1</i>
<b>TOTAL</b>		<b>9</b>	<b>6</b>

<b>Grade 5- level 1</b>	<b>CAREER</b>	<b>MALE</b>	<b>FEMALE</b>
	<i>-</i>	<i>-</i>	<i>-</i>
<b>TOTAL</b>		<b>0</b>	<b>0</b>

	<b>CAREER</b>	<b>MALE</b>	<b>FEMALE</b>
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Research topic

Publisher

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<b>Grade 5- level 2</b>	<i>Scientist</i>	<i>1</i>	<i>-</i>
<b>TOTAL</b>		<b>1</b>	<b>0</b>

Table 3.23

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<b><u>Mean percentage representation</u></b>	<u>74.69 %</u>	<u>25.31 %</u>

**Survey response**

**Color scheme**

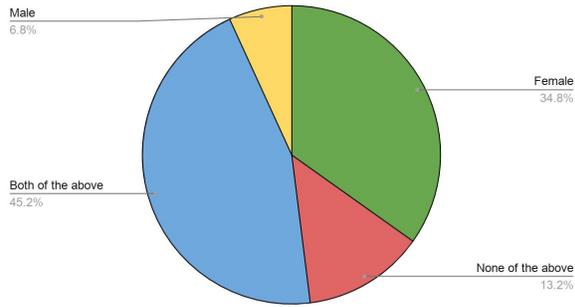
1. Female ⇒ Green
2. Male ⇒ Yellow
3. Both of the above ⇒ Blue
4. None of the above ⇒ Red

*Note- These labels were put after data was collected. The questionnaire did not contain labels such as “Male” and “Female”, in an effort to conceal its purpose.*

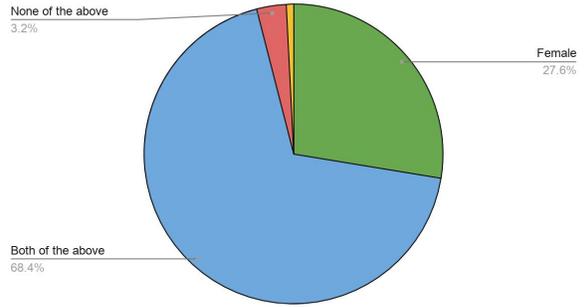
**Primary education from CBSE, ICSE, NCERT, IGCSE, IB and Other boards Survey responses**

**⇒**

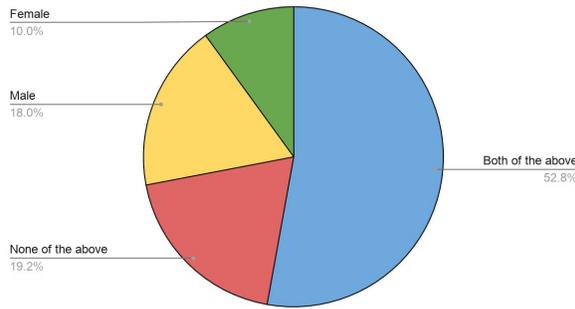
Count of Which image is of an assistant in your opinion ?



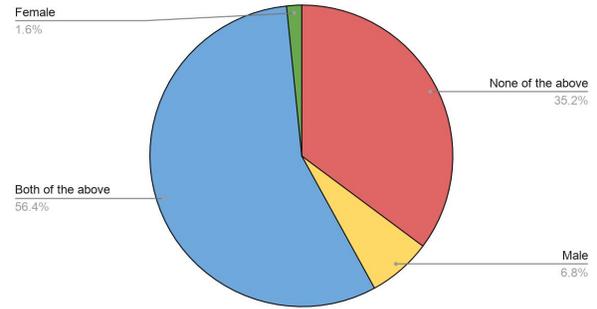
Count of What is an ideal image of a nurse ?



Count of Which option looks like an ideal business leader ?

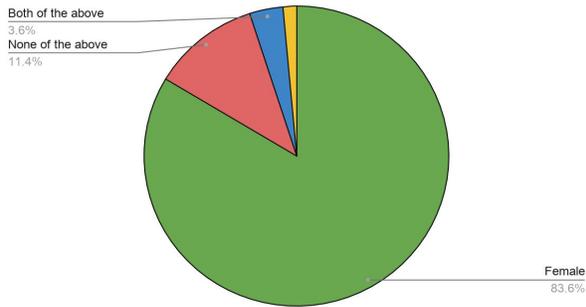


Count of What is an image of a stay at home parent?

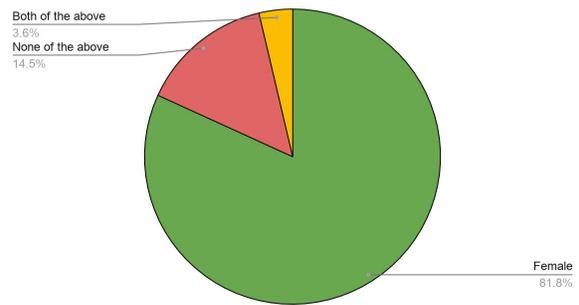


Primary education from State Board Survey responses ⇒

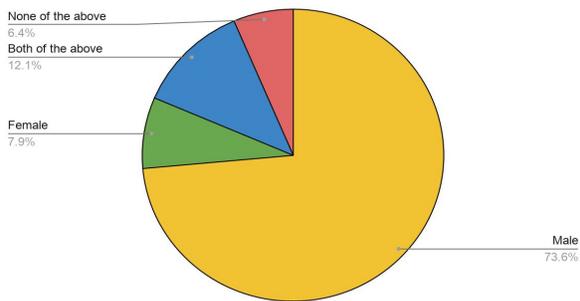
Count of Which image is of an assistant ?



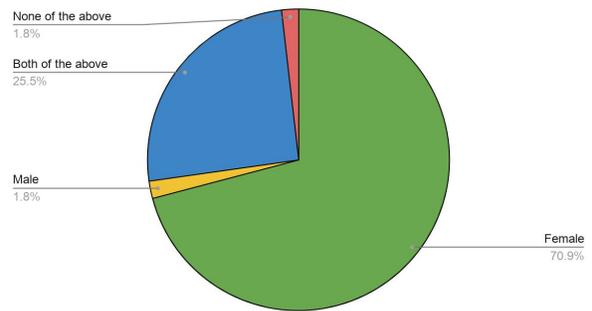
Count of What is an ideal image of a nurse ?



Count of Which option looks like a business leader ?



Count of What is an image of a stay at home parent ?



Free Response Answers :

The most frequent career choices are chosen from each survey.

	<i>Most frequent answer for primary education from CBSE, ICSE, etc. boards</i>	<i>Most frequent answer for primary education from State board</i>
<b>Male</b>	<i>Scientist</i>	<i>Army</i>
<b>Female</b>	<i>Doctor</i>	<i>Teacher</i>