

Gender Homogeneity and Unidirectionality in Gender Role Reversal in Mathematics Textbook

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Abstract

Conventional wisdom regarded mathematics as a culture-free discipline. However, many researchers discarded this culture-free notion of mathematics, as the learning process of any discipline cannot be free from its social context. The process of teaching and learning mathematics may contain social influences and biases. As a result, it leaves math texts wide open to being tainted by the social construction of gender. Therefore, researchers felt the need to analyse mathematics textbooks through the gender lens and chose NCERT's mathematics textbook of Class 6 (2020–21 edition) for content analysis. This paper presents the result of the analysis and discusses the newly emerged patterns of gender bias like gender homogeneity in groups and unidirectionality of gender role reversal in the textbook.

Keywords: Content analysis, gender bias, inclusion, mathematics, NCERT textbook

INTRODUCTION

Apple (1992) says that the school curriculum does not consist of neutral knowledge. Therefore, identifying, choosing, and prioritising a certain kind of knowledge is

nothing but an act of power. India traditionally has been a patriarchal society, and that is why the male hegemony is reflected in our entire education system including our textbooks.

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The issue of male-urban worldview of textbooks was first pointed out by the Report of National Committee on Women Education (1959), which suggested rewriting and redesigning the textbooks. Still, the recommendation of the committee could not be translated into textbooks, and textbooks continued to be instilling and reinforcing patriarchy in the students.

The issue of gender biases and gender inclusion took momentum in the 1970s when the report 'Towards Equality' was published in 1974 by the Committee on the Status of Women in India under the Ministry of Education and Social Welfare. After that, National Policy on Education (NPE) 1986 emphasised the elimination of all kinds of discrimination and focused on promoting gender-sensitive curricula for addressing gender discrimination at all levels of education. In this regard, the curriculum frameworks of 1975, 1988 and 2000 also addressed gender issues but did not mark substantial improvement in the textbooks.

Debates around the National Curriculum Framework (2005) gained momentum with the involvement of some women's organisations and thus, National Curriculum Framework (2005) came out to be a very significant document in the field of Indian Education. Gender concerns in curricula, syllabus, textbooks, and pedagogical practices were addressed and gradually translated into

textbooks substantially (NCERT). Still, the problem of gender bias could not be completely resolved. Studies conducted before and after the NCF (2005) highlighted somewhat similar problem of the invisibility of women, the outnumbering of male characters over females, and the portrayal of men and women in heavy stereotypical attributes and roles (Bhog, 2009; Kalia, 1978, 1980; Mehrotra and Ramachandran, 2010; Nayar and Duggal, 1996; Nayar and Jaireth, 1997; Nayar and Shrivastava, 1996–97, 2000; Srivastava, 2005, 2009, 2013–14). To make the textbooks more gender-inclusive, the focus was primarily given to the quantitative aspect rather than the qualitative. The term 'equality' was interpreted by simply increasing the proportion of women and girls in visual representation, permitting role-reversals, and giving them a tokenistic representation in biographies. These cosmetic and superficial efforts could not mark any radical support for the practices of gender inclusion through education. Therefore, there is a continuous need to reexamine and revisit the gender concerns in education including textbooks.

To reexamine and revisit the gender concerns in textbooks, the researcher chose the Class 6 NCERT Mathematics textbook (2020–21 edition) for the analysis. Why Mathematics textbook Mathematics was for a long time regarded as a neutral and culturally-free discipline

independent from social values (Bishop, 1993 and D'Ambrosio, 1990). If it is culture-free how can it consist of gender biases? In this context, Bishop, Hart, Lerman and Nunes (1993), argue, "There is no sense in regarding mathematics learning as abstract and culture free" (p.1) because the learning process cannot be abstract and context-free, that is, learning cannot be free of societal influence. Thus, it makes mathematics textbooks vulnerable to the contamination of the social construction of gender.

METHODOLOGY

In the present study, content analysis of NCERT's mathematics textbook of Class 6 (2020–21 edition) was performed. The textbooks contained 14 chapters and 320 pages. Visual and textual illustrations containing human characters were the sampling unit of the study. Visual illustration includes all the pictures containing human characters, whereas textual illustrations include all the examples and exercises given in the textbook containing human characters. Analysis of the textbook including visual and textual illustrations was done focusing on five major objectives;

- (i) To find out the gender inclusivity on the cover page of the textbook.
- (ii) To find out the proportion of men and women in the publication team of the textbook.
- (iii) To find out the proportion of men and women in the textbook development committee.

- (iv) To find out the proportion of men or boys and women or girls characters in the visual and textual illustrations.
- v) To find out the pattern of participation of men or boys and women or girls in different areas of life visually, and textually illustrated in the textbook.

Objective Findings and Discussion

Objective 1: To find out the gender inclusivity on the cover page of the textbook

Finding 1: Analysis of the data against the first objective of the study started from the cover page of the textbook. The cover page of the book is designed by Shweta Rao. A girl is depicted on the cover page of the book. She is counting numbers and performing mathematics.

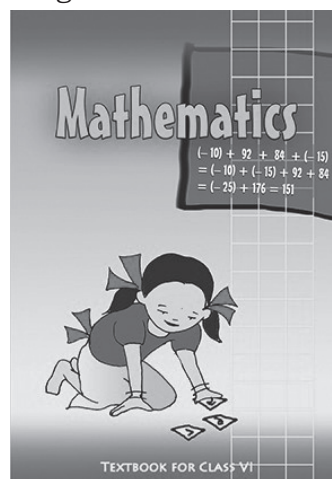


Figure 1: Cover page of Mathematics, Textbook for Class 6

A guide on gender inclusive communication published by

UNODC, defines ‘gender inclusive’ as the linguistic and visual portrayal of women and men that do not promote gender stereotypes. Here on the cover, a picture of a girl performing mathematics dismantles the stereotype of mathematics as the discipline mostly chosen by men. This may set a positive example for girls and boys both hence, it can be concluded to be gender inclusive.

Objective 2: To find out the proportion of men and women in the publication team of the textbook

Finding 2: Further, it was found that there was a total of nine members in the publication team, of which only three women were there. This means only 33.33 per cent of women were there in the publication team against 66.66 per cent of men. It reflects the under representation of women in the publication team.

Table 1

The proportion of men and women in the publication team

Gender	Number	Percentage
Men	06	66.66 %
Women	03	33.33%
Total	09	100%

Objective 3: To find out the proportion of men and women in the Textbook Development Committee

Finding 3: The underrepresentation of women was also found in the

textbook development committee. The committee consisted of 20 members of which there were only six women. Only 30 per cent of women were there against 70 per cent of men in the textbook development committee.

Table 2

Proportion of men and women in the textbook development committee

Gender	Number	Percentage
Men	14	70%
Women	06	30%
Total	20	100 %

The under representation of women in the textbook development committee may affect the presentation of content. A study conducted by Munawar (2004) for UNESCO found a positive correlation between the number of women authors and the number of women characters in the textbooks. Based on his findings, he recommended that the composition of the National Curriculum Development Committee, The National Review Committee, and Textbook Development Committees should be revised to ensure equal participation of men and women. He also recommended clear guidelines to ensure gender balance in the number, and quality of men and women in the bodies concerned with the development of curriculum and textbooks.

His recommendations can also be justified by feminist epistemology which proposes the influence of

norms of gender and gender-specific interests and experiences on the production and dissemination of knowledge. Due to the gender differences in experiences and worldviews of men and women, men are likely to put their experiences and worldviews in the production and dissemination of knowledge, while women are likely to put their experiences and worldviews in the same (Anderson, 1995). For example, male writers usually choose examples from their everyday experiences such as, the example of a fast sports car to calculate speed (Javier, 2016). With this reference, we can conclude that the equal representation of women matters in the textbook development committee, so that their experiences and worldviews may find sufficient space in the textbooks.

Objective 4: To find out the proportion of men/boys and women/girls characters in the visual and textual illustrations

Finding 4.1: Proportion of men/boys and women/girls characters in the visual illustration. In the analysis of visual illustrations containing human characters, it was found that out of 225 characters, 119 characters were men/boys, 103 characters were women/girls, and the gender of three characters could not be identified. This means 52.89 per cent were male characters and 45.78 per cent were female characters in the visual illustrations of the textbook (Table 3).

Table 3
Proportion of men/boys and women/girls in visual illustrations

Human Characters	Number	Percentage
Men/Boys	119	52.89%
Women/Girls	103	45.78%
Could not be identified as either male or female	03	1.40%
Total	225	100%

Finding 4.2: Proportion of men/boys and women/girls characters in the textual illustrations. In the analysis of 184 textual illustrations containing human characters, there were a total of 546 human characters. Of those 546 total human characters, 243 characters were men and 284 characters were women which means 45.98 percent were male characters and 54.02 per cent were female characters (Table 4).

Table 4
Proportion of men/boys and women/girls in textual illustrations

Human Characters	Number	Percentage
Men/Boys	243	44.51%
Women/Girls	284	52.02%
Gender Neutral	19	3.47%
Total	546	100%

After looking at the proportion of men and women on the Textbook Development Committee and visual illustrations, it can be concluded that women are underrepresented;

however, when it comes to textual illustrations, women were found more represented in comparison to men. While women have been historically underrepresented in textbooks of different school subjects (Bachore, 2022; Blumberg, 2007; Chiponda and Wassermann, 2011; Damschen et al., 2005), giving them more space in the textual illustrations of this textbook may be considered as an act of gender equity which is a means to achieve gender equality (UNESCO, 2003).

Objective 5: To find out the participation pattern of men/boys and women/girls in visual and textual illustrations

Finding 5.1: Pattern of inclusive participation in the visual and textual illustrations of the textbook.

In the textbook, several visual and textual illustrations were found to be challenging the stereotypical role of women and hence, could be labelled as gender inclusive. For example, in the textual illustrations (I, II, II, IV and V) given below, women too are given equal space and an equal say in purchasing-related decisions and planning. The woman character illustrated in Example 5 is purchasing fertilisers that are used for farming purposes. This illustration recognises the role of women in farming, purchasing and outside work and hence, challenges the gender stereotypes prevalent in the society that agriculture and farm purchasing are mainly the work of men.

Examples of gender-inclusive textual illustrations given in the textbook

- Sohan and Rita went to buy an almirah. There were many almirahs available with their price tags (p. 4, Exercise 1.2.1).
- Sheila and Mohan have to plan their monthly expenditure. They know their monthly expenses on transport, on school requirements, on groceries. (p. 20–21, Exercise 1.3.4).
- Meera bought 6 notebooks from the market and the cost was 10 rupees per notebook. Her sister Seema also bought 7 notebooks of the same type. Find the total money they paid. (p. 23, Exercise 1.4).
- A merchant had ₹78,592 with her. She placed an order for purchasing 40 radio sets at 1200 rupees each. How much money will remain with her after the purchase? (p. 17, Exercise 1.2).
- Renu purchases two bags of fertiliser of weights 75 kg and 69 kg. Find the maximum value of weight which can measure the weight of the fertiliser exact number of times (p. 67, Exercises 3.7).

Along with gender-inclusive textual illustrations, the inclusion of children from diverse religious identities is also ensured throughout the textbook. See the examples given below:

- Anagha, Ravi, Reshma and John shared their tiffin. Along with their food, they had also brought 5 apples. After eating the other food, the 4 friends wanted to eat apples. How can they share 5 apples among four of them? (p. 138).
- Ramesh had 20 pencils, Sheelu had 50 pencils and Jamaal had 80 pencils (p. 147).
- Savita and Shama were going to market to buy some stationary items (p. 164).
- Ameena and Sarita are making patterns with matchsticks (p. 221).

Finding 5.2: Pattern of sexist participation in the visual and textual illustrations of the textbook. After a careful analysis of the visual and textual illustrations, substantial patterns of sexism were identified. They are discussed below:

1. Reinforcement of the gendered spaces

There were few images (Figure 2) such as a newspaper shop, hotel, bicycle shop, kerosene oil shop, etc., where

no woman was depicted. Spaces like these, which are already believed to be men's spaces, the absence of any woman can strengthen existing bias of gendered spaces.

2. Relatively low gender heterogeneity in group participation

After analysing the grouping pattern of men and women in visual and textual illustrations, it was found that there were two kinds of visual and textual illustrations that contained human characters; one depicting single subjects and the other depicting subjects in groups. The visual and textual illustrations depicting subjects in groups were also of two types; one depicting gender homogenous grouping and the other depicting gender heterogenous grouping. The proportions based on the groups were as follows—

The pattern of grouping of men/boys and women/girls in visual illustrations: There were a total 80 visual illustrations containing human characters. Out of those, 41



Image 1
(Page number 15)



Image 2
(Page number 16)



Image 3
(Page number 41)



Image 4
(Page number 64)

Figure 2: Examples of visual illustrations promoting gendering of spaces

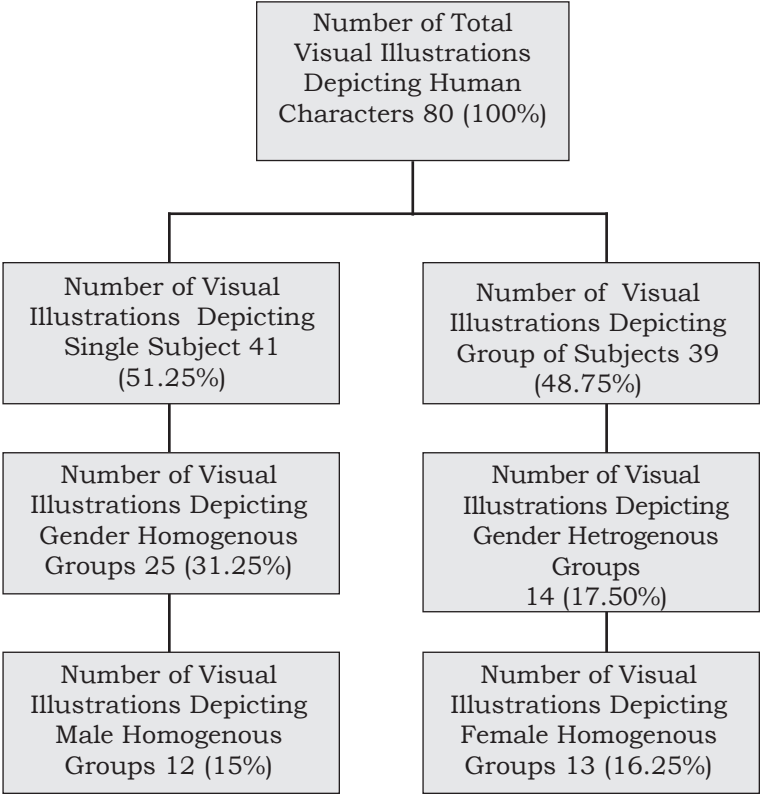
Source: NCERT 2020–21. Mathematics: Textbook of Class 6

images contained single subjects while 39 images contained groups of subjects. In the group images, there were 25 images that depicted gender homogenous groups, while 14 images depicted gender heterogenous groups. In the gender homogenous groups, 12 images portrayed males as a homogenous group and 13 images portrayed females as a homogenous group. It is evident from the flowchart that group images, and especially gender heterogenous group images are quite lesser in number in

comparison to single subject images and gender homogenous group images, respectively.

The pattern of grouping of men/boys and women/girls in textual illustrations:

After analysing the grouping pattern of 184 textual illustrations containing human characters, it was found that 98 illustrations portrayed a single subject, while 86 portrayed subjects in a group. In the textual illustrations that portrayed groups of subjects, there were 54 illustrations that



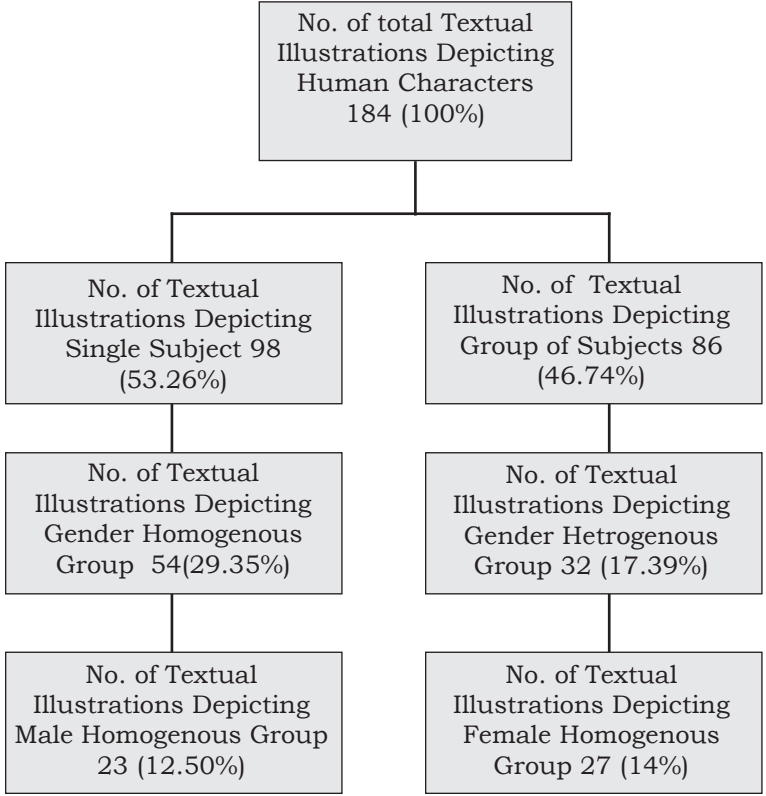
Flowchart 1: The proportion of visual illustrations containing human characters based on grouping

depicted gender homogenous groups, while 32 illustrations depicted gender heterogenous groups. In the gender homogenous groups, 23 illustrations portrayed males as a homogenous group, and 27 illustrations portrayed females as a homogenous group. It is evident from the flowchart that group illustrations, and especially gender heterogenous group illustrations are relatively less in number in comparison to single subject illustrations and gender homogenous group illustrations, respectively.

After careful perusal of the grouping pattern, it was observed that either men or women are alone or are in homogenous groups in most of the visuals or textual illustrations. Some examples from the textbook are reproduced here (Figure 3):

Examples of gender homogeneity in groups in textual illustrations

- Arya, Abhimanyu, and Vivek shared lunch. Arya has brought two sandwiches, one made of vegetable and one of jam. The other two boys forgot to bring



Flowchart 2: The proportion of textual illustrations containing human characters based on grouping

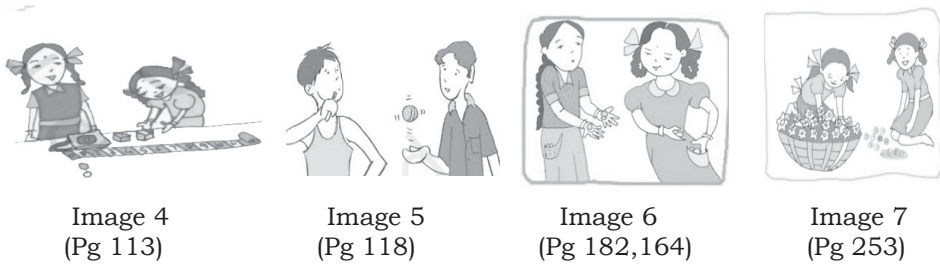


Figure 3: Examples of gender homogeneity in groups in visual illustrations

Source: NCERT 2020–21. Mathematics: Textbook of Class 6

their lunch. Arya agreed to share his sandwiches so that each person will have an equal share of each sandwich. (a) How can Arya divide his sandwiches so that each person has an equal share? (p. 136).

- Ameena and Sarita are making patterns with matchsticks. They decide to make simple patterns of the letters of the english alphabet (p. 221).
- Raju and Balu are brothers. Balu is younger than Raju by 3 years. When Raju is 12 years old, Balu is 9 years old. When Raju is 15 years old, Balu is 12 years old (p. 226).
- Radha is drawing a dot Rangoli (a beautiful pattern of lines joining dots) with chalk powder. She has 9 dots in a row. How many dots will her Rangoli have for r rows? (p. 227) .
- Kamla, Reshma and Meenu are playing this game (p.124).
- Savita and Shama were going to market to buy some stationary items. Savita said, “I have 5

rupees and 75 paise”. Shama said, “I have 7 rupees and 50 paise” (p. 164).

- Ravi and Raju measured the lengths of their pencils. Ravi’s pencil was 7 cm 5mm long and Raju’s pencil was 8 cm 3 mm long (p. 164).
- Nandu bought 500g potatoes, 250g capsicum, 700g onions, 500g tomatoes, 100g ginger and 300g radish. What is the total weight of the vegetables in the bag (p. 176).
- Raman and Imran went to the well and counted 8 steps down to water level. They decided to see how much water would come in the well during rain (p. 118).
- Meena, Beena and Leena are climbing the steps to the hill top. Meena is at step s , Beena is 8 steps ahead and Leena 7 steps behind. Where are Beena and Meena? The total number of steps to the hill top is 10 less than 4 times what Meena has reached. Express the total number of steps using s (p. 235).

- Bhavika has 28 marbles and Vini has 180 flowers. They want to share these among themselves. Bhavika of the hall flowers to Bhavika. But Vini was not satisfied. She felt that she had given more flowers to Bhavika than the marbles given by Bhavika to her (p. 253).
- Two friends Reshma and Seema went to the market to purchase notebooks. Reshma purchased 2 notebooks for rupees 24. What is the price of one notebook? (p. 256).

To unfold the menace of these visual and textual illustrations, let us come to the real picture of the rural and semi-urban classrooms of India where male and female students sit in separate rows. While forming groups during different curricular and co-curricular activities, they are placed in different groups. They rarely interact with each other, and end up with life long biases and prejudices toward each other. There is an example from a nearby school where our pupil teachers were going for their internship. As taught in the pedagogy classroom, one of the pupil teacher started forming some gender heterogeneous cooperative groups for group work during her class. Meanwhile, some of the girls from the class stood up and denied forming groups with boys by saying, “our teachers say boys are not good so girls should stay away from them”. These were happening almost every day. Sometimes, students and other times, their teachers intrude not to form gender heterogeneous groups

while teaching to avoid chaos. This is the attitude of most of the stakeholders in rural and semi-urban areas.

If our textbooks contain mostly gender homogenous grouping examples, then it would reinforce the existing attitudinal distance between men and women, promote gender othering, and undermine the goal of a gender-inclusive and peaceful society while affecting the academic achievement of all students simultaneously (Alan et al., 2018; Bandyopadhyay and Subrahmanian, 2008; Lavy, 2008). On the contrary, the textbooks can bridge the attitudinal distance between men and women by putting them in positive illustrations of togetherness. Consciously or unconsciously, these illustrations may deconstruct the mental blocks of teachers and students and promote more contact and interaction (Adesoji, Nathaniel and Nyinebi, 2015; Kortenhuis and Demares, 1993; Peterson and Lach, 1990; Wharton, 2005; Zhan, Fong, Mei and Liang, 2015). ‘Othering which means the act of treating someone as though they are not part of a group and are different in some way (Cambridge Dictionary, 2023) is more likely to happen and multiply in the presence of unfamiliarity, so being together and broadening our understanding of others and the world is one way to reduce it. The contact hypothesis given by social psychologists proposes the idea that conflict and prejudice can be reduced

when people who belong to different groups spend time or are seen spending time with one another (Allport, 1954; Zhou, S., Page-Gould, E., Aron, A., Moyer, A., and Hewstone, M., 2019). Livingstone (1990) says, "Textbooks may organise pupils' frames of thinking in specific ways, creating dichotomies and oppositions, forming associations and connotations". Therefore, with a specific reference to the importance of textbooks in the shaping of the idea of gender and the importance of the contact hypothesis in promoting inclusion, gender heterogeneous illustrations must be kept in textbooks. For example, if the students find 'Meena, Raghu and Shabeena are climbing the steps' in place of 'Meena, Beena and Leena are climbing the steps', it may set a more positive example of gender heterogeneous grouping, and togetherness of male and female children in front of the students and the teachers. Frequently exposing them to this kind of illustration in place of gender-homogenous illustrations may gradually tend them to form gender heterogeneous groups in real settings and thus, make them more gender inclusive in nature.

3. Unidirectionality in gender role reversal

It was also observed that there are several instances in visual and textual illustrations where women are depicted in non-traditional gender roles like trader, farmer and working outside the home. Dipta Bhog (2009)

also mentioned that in textbooks women are shown to be capable of doing what men do. However, in the whole textbook which contains 14 chapters and 320 pages, male characters are performing the same traditional gender roles. Only one textual illustration given in Chapter 7 dealing with fraction is an exception. See the excerpt below:

Mother asked Neelu and her brother to pick stones from the wheat. Neelu picked one fourth of the total stones in it and her brother also picked up one fourth of the stones. What fraction of the stones did both pick up together? (pg.155).

Except this, there is not a single example of a man or boy doing, participating in household work or other work that is believed to be feminine work. See the next textual illustration:

Raman and Imran went to the well and counted 8 steps down to water level. They decided to see how much water would come into the well during rain. (p. 118)

Contrary to newspaper shops, bicycle stores, hotels and bookstores, the well is believed to be a feminine space where women are usually found to fetch water for household work. In the above example, two boys are near the well but not for fetching water. The same example could have been made more gender-inclusive only by adding the responsibility of fetching the water to the boys. For example,

Raman and Imran went to the well (to fetch water) and counted 8 steps

down to water level. They decided to see how much water would come into the well during rain. (p.118).

Gender Schema Theory (Martin and Halverson, 1981) and Social Role Theory (Eagly and Wood, 2011), which focus on the development of gender roles, contend that across the lifespan people view certain roles as more or less appropriate for their gender. It seems reasonable that if seeing men and women in roles that are gender-congruent encourages gender-congruent aspirations and behaviour, then regularly looking at role models who are gender-incongruent should lessen gender stereotyping and encourage gender-counter-typical aspirations and behaviour in both boys and girls. Examples of such role models include male kindergarten teachers, male healthcare workers, and female scientists and leaders. (Olsson and Martiny, 2018).

However, it has been observed that men are not represented in gender-incongruent role models in the textbook. In the sphere of life as well, the proportion of women in men-dominant jobs has steadily increased in the past two decades, whereas the proportion of men in women-dominated jobs has remained relatively unchanged (England, 2010, 2011; Saad, 2012). This is because men have certain psychological barriers. Some important factors for this psychological barrier among men in choosing these communal roles are gender stereotypes, the lower

status of communal roles, lack of role models, etc. (Croft et al. 2015). This subtle bias of the lower status of communal roles may be the reason for this unidirectional gender role reversal in the textbook as well.

Gender equality cannot be achieved by only putting women into the gender-incongruent roles but men too are needed to put in gender-incongruent roles. A study says that promoting men's interest in HEED (Health care, Elementary Education, domestic roles including child care) roles is important for overcoming labour shortages and promoting gender equality (Croft et al., 2015). Without a corresponding shift in boys' attitudes toward communal roles (Sinno and Killen, 2009), girls are unlikely to pursue high-status or demanding careers due to difficulties with pursuing a career while simultaneously being primarily responsible for domestic work (Hochschild and Machung, 2012). Girls may be less inclined to pursue high-status or challenging occupations if boys' attitudes toward communal tasks do not change (Sinno and Killen, 2009). This is owing to the difficulty of pursuing a career while also being largely responsible for household work (Hochschild and Machung, 2012). Thus, the textbook focusing on unidirectional gender role reversal for women cannot provide appropriate models and examples for boys to deconstruct the psychological barrier towards communal roles and are biased and problematic.

Summary of the Findings and Conclusion

The present study, through the analysis of Class 6 NCERT's mathematics textbook, highlighted some of the developments and missing cornerstones in the practice of gender inclusion through textbooks.

- The pursuit of the first objective of the study revealed the gender inclusiveness of the cover page of the textbook.
- The findings related to the second and third objectives uncovered the under-representation of women in the publication team as well as in the textbook development committee.
- Aiming at the fourth objective unveiled the slight underrepresentation of women in visual illustrations and more representation in textual illustrations.
- Findings related to the fifth objective regarding the pattern of participation disclosed several interesting patterns of inclusion as well as sexism. One of the findings indicated that most of the illustrations related to women or girls in the textbook depicted them executing non-stereotypical gender roles as a farmer, trader or others and hence, found to be gender inclusive. Along with it, this finding also suggested the fair representation of different religious identities throughout the illustrations of the textbook.
- A finding related to the fifth objective revealed reinforcement of gendering of spaces by some visual illustrations in the textbook in the form of the absence of women or girls from spaces like bicycle store, newspaper shop, hotel and kerosene oil shop.
- Another finding related to the fifth objective acknowledged relatively less gender heterogeneity in group participation. According to it, men and women are generally depicted alone or in gender-homogeneous groups in visuals and texts.
- The last finding of the fifth objective disclosed a subtle bias of unidirectionality in gender role reversal throughout the textbook, where women or girls are depicted in several non-stereotypical gender roles, and men or boys are almost found in their traditional gender roles only.

Based on the findings, it may be concluded that due to the considerable debate on the content of education in the last few years and an increasing acknowledgment of the significance of gender in the domain of textbooks, curricula, policy, gender and inclusion concerns are reflected in the textbooks. As a result, representation of women has increased and their participation pattern has also changed considerably in the textbook development committees and inside the textbooks. However, many subtle biases go unnoticed due to extensive

socialisation under patriarchal influence. Despite our knowledge, training, and good intentions, sometimes, this tenuous influence of patriarchy remains in our minds and textbooks and keeps our task of gender inclusion unfinished. The findings of the present study related to bias, under representation of women/girls, gender homogeneity, and unidirectionality in gender role reversal are specimens of the traces of patriarchal socialisation. Gender bias and homogeneity in illustrations may strengthen the patriarchy-created attitudinal distance between

men and women. Unidirectionality in gender roles portrayed in textbooks may have an impact on the development of children's conception of their own gender roles and gender roles of the other sex. Hence, it serves as a setback to our progress towards gender equality. Therefore, the present NCERT textbook of Class VI taken for this study needs revision keeping these patterns in mind. Additionally, subtle sexism need to be carefully recognised and resolved as soon as possible from other textbooks and other study materials.

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