

FROM CHARANAMRIT TO GANGAJAL VIA BRINDAWAN- MATHURA-KASHI: CULTURAL POLITICS OF WORD-PROBLEMS IN SARASWATI SHISHU MANDIR MATHEMATICS TEXTBOOKS

Kishore Darak
Tata Trusts, Pune, India
kishore.darak@gmail.com

Textbooks are the prime source of knowledge in Indian schools. They occupy sacrosanct status particularly due to memory-based examinations. They are used not only as artefacts of learning but also as carriers of values, beliefs and ideas, particularly of dominant classes. Compared to textbooks of History or Language, those of Mathematics or Physical Sciences are perceived as ‘objective’ and therefore ‘harmless’ in the context of social inequalities. In this paper, I attempt to analyse word-problems from Mathematics textbooks of Saraswati Shishu Mandir (SSM) to unpack the structures and layers of gender, caste and class domination. I show how SSM textbooks are overtly prejudiced and argue that contexts presented in word-problems should be locally relevant but without bartering away progressive social outlook.

TEXTBOOK-CENTRIC SYSTEM OF SCHOOLING

The fact that educational discourse in school education in India revolves around paper-textbooks (textbooks hereafter) is well acknowledged by all actors in education – students, teachers, parents, community at large and academics. Completing the syllabus usually means ‘finishing’ the textbook from cover to cover, and success or intelligence means memorising textbook in verbatim. Textbook-examination nexus has survived all policy recommendations against it. Krishna Kumar (2004, 36) writes:

The examination-textbook linkage became stronger as the system of education expanded and as the stagnation of work opportunities exacerbated the competitive character of the system. The linkage defeated all attempts to reform the curriculum and the methods of teaching.

The problem is that textbooks do not offer pieces of information but what Michael Apple famously called as ‘valid’ knowledge that is not neutral. He reminds us that —

The curriculum is never simply a neutral assemblage of knowledge [...] It is always part of a selective tradition, someone’s selection, some group’s vision of legitimate knowledge. It is produced out of the cultural, political, and economic conflicts, tensions, and compromises that organize and disorganize a-people. (Apple, 1993, 222)

Students and teachers seem to ‘willingly’ surrender their autonomy to textbooks at the cost of pedagogical choices and methodological innovativeness. M. K. Gandhi too cautions us when he writes that:

If textbooks are treated as a vehicle for education, the living word of the teacher has very little value. A teacher ... becomes a slave of textbooks and has no opportunity or occasion to be original. It

therefore seems that the less textbooks there are the better it is for the teacher and his pupils. (Gandhi, 1939)

TEXTBOOKS AND HIDDEN CURRICULUM

An apparently ‘progressive’ curriculum or syllabus can lead to choice of a text loaded with what Phillip Jackson famously conceptualised as the ‘hidden curriculum’. By hidden curriculum one understands unwritten transaction and reproduction of beliefs, values, norms, ways of behaviour, or simply ‘culture’ through formal educational content and informal and other social interactions in a formal setting like school. In a textbook, hidden curriculum can be employed through all of its building blocks including words, images, illustrations, etc. leading to cultural supremacy and stronger socio-cultural power to some section of society, many a times the dominant class. For instance, in the 1920s, in an attempt to raise concerns of the marginalised about politics of the upper castes (formerly touchable castes) in schooling, C. S. Kate, a reader from Solapur, writes in a letter to Marathi fortnightly *Bahishkrut Bharat*, founded and edited by B. R. Ambedkar.

How bitter are the tongue, gaze and thoughts of the touchables!! Grade 3 Balbodh Textbook Lesson 46 – Occupations in Village. This lesson employs reviled language mentioning caste of the persons like Kusha *dhor* and Parasha *chambhar*. In school-textbooks too the bitterness of their (touchables’) tongue, gaze and thoughts is prominently visible. (Kate quoted in Darak, 2013. Translation by Ms. Madhuri M. Dixit)

As evident here, hidden curriculum appears to have been used for either ill representation or misrepresentation or underrepresentation of the marginalised communities at the cost of their self-respect: a fact that is clearly acknowledged by policy documents in India that cultural politics of school-processes leads to ‘Brahmanisation as key defining feature of curriculum’ (NCERT, 2005 A, 24) and of schooling.

The large body of scholarship on textbook analysis suggests that usually subjects like language and history are prime sites of employing cultural politics through textbooks. Histories of textbook related controversies from across the world also converge with this view. On the other hand, it is assumed that subjects like Physical Sciences and Mathematics, due to their epistemologically ‘objective’ nature, leave little scope to any socio-cultural variation.

The invariance of answer in a mathematical problem or its independence with respect to the algorithm may create a ‘feeling’ that mathematics can be independent of context too; but word-problems may be the game-changer. Although word-problems are considered as a pedagogical tool for creating connect of ‘abstract’ numbers with the ‘real’ world, which may imply their agency in creating meaning, large body of research on word-problems focuses on utility of word-problems in helping students arrive at desirable answers, on connection between ‘nonsensical’ answers and wording of problems, or on link between difference in structure of word-problem and variation in students’ performance, etc. But cultural politics employed through Mathematics textbooks and patterns of hidden curriculum embedded in word-problems remain underexplored.

Word-problems as a social text

Word-problems attempt to present situations closer to lived realities so that numbers and operations presented in a mathematical text can be contextualised. In doing so, they may succumb to the hegemonic tendency of presenting a particular point of view that is usually familiar to the dominant classes. Richard Barwell explains why treating word problems as texts leads to difficulties in understanding ‘unrealistic’ responses of students or why their responses may be related to their socio-economic backgrounds, and he argues that “word problems need to be understood as social texts. Early research on students’ performance on word problems generally treated them as mathematical texts or, at best, linguistic texts.” (Barwell, 2018, 117). If we examine word-problems as social texts, they can be analysed for different aspects of societal relations including ideology, patterns of marginalisation and subordination as well as ways of exhibiting social power. With this outlook in place, Mathematics textbooks may also be treated as a cultural artefact instead of merely a pedagogical tool.

Research in mathematics education focussing on word-problems alerts us to this nature of word-problems. Words, pronouns and phrases used in word-problems, artefacts and goods shown to create real-life situations may create a different meaning in the mind of a learner depending on her socio-cultural background and is a function of ‘cultural capital’ in Pierre Bourdieu’s terms. Designer of a word-problem may come from a different experience of life than those of learners leading to some intrinsic prejudices coded in the words of a word-problem and also in imagining a desired, correct answer. A context which is apparently neutral or value-free may also turn out to be a prejudiced one due to engagement of learners with the situation described in the word-problems. A famous example discussed in scholarship in the field is – It costs \$1.50 each way to ride the bus between home and work. A weekly pass is \$16. Which is a better deal, paying the daily fare or buying the weekly pass? Tate (1994) argued that the problem designer implicitly assumed that people work for 5 days a week and that one person has only one job ignoring possibility of people working on weekends too and having more than one jobs. This lived reality was imposed on the “neutral” situation by the African American students and led them to choose the ‘wrong’ answer as ‘weekly pass’. The solution was economically prudent and mathematically logical for these students. Such integration of real life situations can be argued to be superficial or be seen as an act of tokenism because the more important question – *whose real life experiences* – is brushed under the carpet. While discussing the idea of ‘humanising students’ Mathematics curriculum’ in the context of urban students, Ukpokodu (2016, 134) cautions us about ‘integrating superficial content’ in word problems that ‘trivializes and stereotypes urban students’ lives and their communities.’ With appropriate examples of word-problems she discusses how some of the teachers may consider some word problems as intending to be ‘culturally responsive’ but may end up stereotyping the community as drug addicts or dealers.

Schools across cultures consider textbooks as tools of establishing structural superiority of one class over the other and therefore may show clear tendency of choosing texts that are ‘suitable’ to their ideology. In her brief but engaging story of Chinese schools in Calcutta, Zhang Xing (2010, 53) describes how in the 1950s and 1960 schools aligned to pro-Guomindang faction (for example Meiguang School in Calcutta) considered textbooks provided by People’s Republic of China not appropriate “due to very different ideology” and it explains “how ideological differences in regard to textbooks became a political issue at the Peimei School.”

Even though ideological moorings are common to social enterprises, Mathematics textbooks cannot be left outside socio-cultural analysis while unpacking the ideological framing. Research about mathematics textbooks from different cultures reiterates this fact. For example, Anjum Halai (2007, 114) describes mathematics textbooks in Pakistan as carriers of tasks describing –

[S]ituations which would be culturally regarded as the domain of males. For example, in an exercise of ten word problems, there would be eight word problems favouring boys through reference to their favoured profession and through mentioning male names. This was found in most textbooks whether published by local private publishers or those publishing for the textbook boards.

Thus descriptions in word-problems in mathematics textbooks should also be seen as “‘valuative selections’ from a much larger universe of possible knowledge and collection principles” and they must be probematised “so that the social and economic ideologies and the institutionally patterned meanings that stand behind them can be scrutinized.” (Apple & King, 1983, 84).

WORD-PROBLEMS – EXAMPLES FROM SSM TEXTBOOKS

Following sections discuss the ways in which word-problems can be employed to create a cultural discourse in India. By exploring subtle as well as overt biases I argue that word-problems in Mathematics textbooks can also be used as tools for dishing out certain type of world-view as a valid or official view.

My examples are from elementary grades from textbooks published by one private publication: Saraswati Shishu Mandir (SSM). They are used by schools established by Vidya Bharati, an outfit of Rashtriya Swayamsevak Sangh (RSS), a right-wing organisation believing in supremacy of Hindu (read Brahman) culture and working towards universalisation of the same. Ideologically the SSMs attempt to build Hindutva (read Bramanism) as a practice among the rural masses. Over the past 70 years since early 1950s, about 25,000 SSMs and similar schools are opened and run by the Vidya Bharati in an attempt to capture the vacuum created by failure of the state to provide schools for children, particularly marginalised children in rural India. Some studies have shown that the discourse of SSMs through their textbooks as well as their daily conduct is highly prejudiced against feminine genders (Chauhan, 2011, 2012) and teaches hatred (Sundar, 2004). But the textbooks chosen for analysis by these scholars are language and history textbooks. With examples of some word problems from grades III, IV and V textbooks, my attempt would be to raise issues arising in ‘inclusion of local contexts’ and ‘lived experience of learners’, since National Curriculum Framework 2005 suggests incorporation of “local knowledge and traditional skills, and a stimulating school environment that responds to the child’s home and community environment” (NCF, NCERT, 2005 B, ix).

As stated in the preface, the publishers of the textbooks published in 2008 by Saraswati Shishu Mandir Prakashan, Mathura, believe that “Mathematics is the basis of transactions in our life, art, knowledge and science. The key to proliferation of knowledge in science, computer or nuclear weapons lies with Mathematics. But due to lack of interesting style (of presenting and teaching) children consider learning important subject like Mathematics as most complex and difficult.” These textbooks of grade 2 to 5, as the preface states, are developed to make mathematics more interesting by “a group of SSM teachers after adequate

engagement with and deliberation on (the topic).” My analysis treats word-problems as social texts that play a role beyond merely presenting a mathematical problem statement to learners.

HINDU GODS, HINDU DEVOTEES

In an attempt to teach concepts of Operations with Metric Units, textbook of grade IV gives the following problems.

1. Height of temple of *Radhaji* (companion or confidant of Lord Krishna) is 143 m. 50 cm. If height of one step is 35 cm, how many steps one needs to climb to go to the temple? (page 88)
2. Virndavan Rangji temple has a pillar made up of 250 kg. 680 gm gold. Dwarikadhish temple of Mathura has golden cradle weighing 200 kg 800 gm and tower of Kashi Vishwanath temple is coated with 251 kg 350 gm of gold. What is the total amount of gold in the three temples? (page 87)
3. Indra’s vehicle is *airawat* (elephant) and Ganesha’s vehicle is mouse. The weight of mouse is about 750 gm and that of the elephant is about 10 quintals then how many times is the elephant heavier than the mouse? (page 91)

It can be argued that visiting temples and worshiping gods is a routine experience for children. But it is not highlighting of everyday practices of the tribal communities whose children attend SSM schools in large numbers. Names of the Hindu deities, the mythic characters – Radhaji, Rangji, Dwarikadhish, Vishwanath, Indra and Ganesha – appear as real-life characters. But the ‘lesser deities’ of the tribal children do not find any mention. The word-problems not only appear to rob the tribal children of their culture by keeping silent on symbols pertaining to their culture, but are also imposing upper caste Hindu deities on them. In fact, the textbooks do not acknowledge tribal communities, they call them as *vanavasi* (forest dweller), a term specifically used by RSS in its sanitising activities among tribal groups. Even though freedom of worship is a right in India, mention of only upper caste deities implies them to be a part of the ‘normative’ right.

Gender and SSM Textbooks

We consider another set of word-problems to discuss how gender is created and reproduced in the textbooks:

4. For the marriage of his daughter, Ramendra took loan of Rs. 25000 from his provident fund on 7th March 1999 at the rate of 13% p.a. He repaid the loan on 12th October 1999. What is the amount of repayment? (grade V, page 74)
5. 426 brothers and sisters learn in a school out of which 142 are sisters. what is the ratio of brothers to sisters? (grade V, page 73)
6. Geeta and Seeta met in the temple. Geeta told Seeta that she would visit the temple on every second day on the same time. Seeta said that she would not be able to make it every second day but would visit the temple every third day at the same time. If they met in the temple on 31 August for the first time, on which days would they meet in the month of September?

Throughout the textbooks all children receive a peculiar mention as *bhaiyya* (brother) and *didi* (sister). Children as young as 6 to 11 years old are never imagined as friends or simply boys and girls. It indicates that these textbooks have a peculiar tendency of permitting only a ‘pious’ relationship between opposite

sexes, even though the same textbooks celebrate Krishan and Radha who, according to the same mythological stories, shared a relationship outside their marriages.

Usually, a problem discussing about borrowing and lending at some interest rate could think of many situations in which such monetary transactions take place. But the textbooks borrow for ‘marriage of a daughter’. It subscribes to a prevalent thinking that marrying the daughter is a responsibility of the father (and as a flip side, controlling her sexuality is his right). Moreover, even if one is debt-laden, one has to marry one’s daughter observing minimum standards of celebration. Marriage and dowry are two important reasons why daughters are considered as *boz* (burden) in families in the Indian psyche. The SSM books simply strengthen this thinking by creating such situations in the word-problems.

Another and more interesting story is that of Seeta and Geeta (problem 6 above). It is used to teach LCM and the calendar. In all the SSM textbooks of Mathematics, women and girls are rarely present in word-problem and if they are, they are largely confined to domestic spheres performing the ‘traditionally acceptable’ roles for women. If at all they move out of their domestic limits, they go as far as the temples or on pilgrimage as good devotees. At best they may go to buy groceries. Word problems on profit-loss, interest, ratio-proportion clearly indicate that women and girls do not get involved in any meaningful financial transaction neither do they own any property or goods. All transactions involving money (be it selling cows or lighting some temple or borrowing money from bank) are restricted to the masculine gender. The only scholastic activity women do even within their domestic confinement is reading certain pages of holy texts like *Ramayana* or *Bhagavdgeeta*. The textbook girls and women possess high moral character, remain chaste especially if they are devotees of upper caste Hindu gods and spend their lives performing *seva* (service) of gods and men-folks. Such confinement of women to domesticity and their limited exposure to external world only in the form of temples and pilgrimage severely restricts entry of ‘real’ women from ‘real’ world in the textbook. Even if visiting temples and traveling for pilgrimage is a part of lived reality of women and girls in the local milieus, there are major other lived experiences that are completely ignored. Women in the geographies where these textbooks are circulated are involved in large range of labour-based activities outside their domestic worlds. These include farming, hunting, working on construction sites, milking domestic animals including buffaloes (not only holy cows, a favourite animal of these textbooks), managing small shops, teaching, nursing, and so on. On this background the selection of only particular type of experiences neglects their knowledge, skills, labour, ownership, and meaningful transactions. Such selections become further problematic considering that the tribal children come from families that may not be soaked completely in patriarchal ideology as the textbooks are.

This analysis, juxtaposed with aforementioned analyses by Chauhan (2011, 2012), Sundar (2004), clearly establishes the misogynistic nature of SSM textbooks. Textbook ignorance of existing higher levels of gender equality among tribal societies which is actually a lived reality for children and its imposition of Brahmanical patriarchy even in the most ‘objective’ of the school subjects, amounts to setting up a clear example of hidden curriculum. It is coherent with the overall project of the right-wing. Ironically, it coincides with the agenda of textbooks from Pakistan (Halai, 2007), the ‘perceived enemy’ being used by RSS and SSMs to build a ‘Hindu Nation’.

HINDU WAY OF LIFE – THE PRESCRIBED NORMATIVE

The textual persecution of multicultural reality of India becomes severe when upper-caste Hindu practices appear with meticulous details for all kinds of learners in these textbooks. Consider the opening paragraph on page 87 of grade V textbook. The chapter is meant for teaching Traders' Accounts.

7. Description of trade rituals (*Vyapaar Vidhi*): On an auspicious day, the first thing to be done is to draw a picture of the deities Ganesh and Laxmi and write the holy chanting on the accounts book and then to worship it. Then credits will be written everyday on the left hand side and the debits will be on the right hand side.

It is clear that the very first line of the above description does not have any connection with the accounts one would write 'mathematically'. Such descriptions of sacrosanct status are meant for prescribing 'normative culture' through textbooks and are meant to show 'correct' ways of life, thereby establishing supremacy of dominant cultures. This description reminds me of the work of Julia Kwong (1988) on Chinese mathematics textbooks. With the help of suitable word-problems Kwong discusses how Chinese Mathematics textbooks, particularly from the late 1960s to early 1980s, were sites of dishing out political ideology rather than being mathematical artefact or instruments. For example -

The proletariat revolutionary faction in the Red Flag Printing Company was filled with the proletariat love of Chairman Mao. As a part of their contribution to their national day celebration, they enthusiastically printed pictures of Chairman Mao. They printed 4392 copies in the morning and 5608 copies in the afternoon. How many could they produce in one day? (Textbook of Mathematics of 1969 quoted in Kwong, 1988)

Irrespective of the concepts to be taught, the SSM textbooks show high tendency of detailing only upper caste Hindu practices. We may observe how the problem of simple addition of liquids comes in through the route of a temple or home based institutionalised practice of worshipping Hindu gods. Consider the following problems.

8. 200 litre milk, 5 litre honey and 10 litre *gangajal* (holy water of river Ganges) were used to make *panchamrit* (holy mixture of 5 liquids 3 of which are derived from milk of Holy cow) on the day of Janmashtami (birth day of Lord Krishna). If 50 litre curds and 10 litre *ghee* (clarified butter) were used, what was the total quantity of *panchamrit*? (grade IV, page 92)
9. Ekata sister's mother (*Ekta bahin ki mataji*) prepared 2 litre *charanamrit* on the day of Janmashtami. She used 300 ml milk, 100 ml honey, 150 ml curds and the rest *gangajal*. How much *gangajal* did she use? (grade III, page 93)

The above problems carry an intrinsic assumption that all teachers and learners know what *charanamrit* or *panchamrit* is, and they even have the knowledge of its recipe. Such normative assumptions appearing in the prime source of 'valid knowledge' called textbooks, lead to assertion of superiority of the culture that follows such practices. Coming to think of reception of such problems, it is possible that learners from marginalised sections including tribals may not be aware of the cultural 'context' of the word-problem. They are put to disadvantage as they need to learn both the context and the mathematics incorporated in it. For instance, in

domestic settings the *charanamirt* is usually prepared by the mother; but in example no. 8, the subject is not present and the volume of *panchamrit* suggests some other setting. The proper names of girls used in examples always have an epithet *bahin* (sister), as found in example no. 9 above, which teaches learners that all girls are sisters, particularly of the school-going boys. As discussed earlier, it appears that inter-personal relations like friendship between opposite sexes is forbidden in the textbooks of SSM.

Word-problems describing religious symbols of upper caste Hindus appear so frequently that one can sense an agenda of prescribing ‘Hindu way of life’ as the only ‘worthy’ way of life. These symbols are primarily related to unquestioned devotion to god, religious texts, religious practices and rituals.

10. Distance from Hathras to Mathura and Mathura to Vrundawan is 36 km 450 m and 10 km 170 m respectively. Suresh *bhaiyya* (elder brother Suresh) went from Hathras to Vrundawan for *darshana* of Banke Bihari (bow before god Banke Bihari). How much distance would he need to travel? (Grade IV, page 83)
11. The book of Ramayana contains 1272 pages. If Rohit’s mother (mataji) wants to finish reading Ramayana in 12 days then how many pages should she read every day? (Grade III, page 58)

The task of adding distances or division of 4-digit number by a 2-digit number also requires reference to places of pilgrimage or holy texts of upper-caste Hindus. If one claims that the names of ‘real’ places are mentioned in problem statement 10 above, shouldn’t the distances also be ‘real’? Nowhere in India are distances between two towns measured to an accuracy of 10 meter. Moreover, the problem can talk of real places but why would the reason of travel be Banke Bihari’s *darshan*? Can Suresh not be simply Suresh, without the imposed brotherhood through the word *bhaiyya* and travel between these places without visiting Banke Bihari? Can Rohit’s mother not read any other book, for getting information, knowledge or sheer entertainment with a target of finishing it in certain number of days? Is it necessary to tie her ability to read to devotion, to surrendering to a religious symbol?

MILITARISATION AND SANSKARI HINDU PURUSHA

Other popular choice of contexts in SSM Mathematics textbooks is contexts related to the military. One finds problems of division based on deploying soldiers on border to respond to an attack, deporting soldiers from one place to another, etc. appear as ‘normal’ contexts. Descriptions surrounding the actual arithmetic in the word-problems have plenty of cultural references that point in the direction of a Hindu nation. The cultural world minus the maths in a maths text book is a homogeneous nation. The calculations children are supposed to make are meant to calculate amount of *prasad* (holy food) distributed after worshipping idols, to understand how the rituals around new account books of Hindu traders are performed, to underline the stereotype and highly patriarchal family by computing expenses for sister’s marriage, sum up total number of devotees visiting Kumbh Mela, and so on and so forth. The objects taken for calculations have a religious meaning for instance, cows, pages of Ramayana, frequency of visits to the temples, flags. If a floor is to be remade, it would be in the temple of the deity Hanumana. If a woman (read mother) is preparing some food item, it would be for offerings to the god. The women would piously observe Brahmanical Hindu traditions and rituals.

It is clear that Indian values and traditions are equated with values and traditions of upper-caste males by RSS and its allies. As SSM proclaims it (SSM, 2019) –

The child is the centre of all our aspirations. He is the protector of our country, Dharma (Religion) and culture. The development of our culture and civilization is implicit in the development of the child's personality. A child today holds the key for tomorrow. To relate the child with his land and his ancestors is the direct, clear and unambiguous mandate for education. We have to achieve the all-round development of the child through education and *sanskar* i.e. inculcation of time honored values and traditions. (SSM Website: <http://saraswatismmp.com/about-us.php>)

DISCUSSION AND CONCLUDING REMARKS

Molefi Asante presents a concept of centricity which means “a perspective that involves locating students within the context of their own cultural references so that they can relate socially and psychologically to other cultural perspectives.” The concept of centricity can be applied to any culture. According to Adante, “for the white students in America, this is easy because almost all the experiences discussed in American classrooms are approached from the standpoint of white perspectives and history” (Asante quoted in Tate, 1998). It appears that the SSM textbooks discussed above provide such centricity to upper-caste Hindu children although such children coming from upper caste or class may not even bother to go to schools like SSM. But since the project is to develop child through ‘*sanskar*’, SSMs that perpetually valorise upper-caste culture cannot think of the ‘real’ learners in their schools and their culture. Kancha Ilaiah (1996, 7) discusses in his autobiographic reflections, young learner's alienation due to cultural disconnect with content of schools.

We (dalit-bahujans) knew nothing about Bramha, Vishnu or Eswara until we entered school. When we first heard about these figures, they were as strange to us as Allah or Jevoha or Jesus were.

Such a disconnect between the lived realities of learners and curricular content may lead to alienation among children from marginalised communities and push them into glorified traditions of the Hindus. SSMs, where “People began to send their children to these schools in preference to christian convent-schools and over so-called public schools. In Saraswati Shishu Mandirs the children could learn about their Hindu culture” (SSM Website), proclaim their agenda to use textbooks as tools of proliferation of the so-called Hindu culture which is highly patriarchal and bramhmanical in its character. Considering that these schools are not much controlled or regulated by the state, the curricular agenda itself leads to overt indoctrination and not education, even if education is imagined in instrumentalist way, leave alone what was advocated by Jotirao Phule (1827-1890) or Paulo Freire (1921-1997) as vehicle of emancipation from oppression. One wonders if there is any need to even look for the hidden agenda in SSM textbooks. In case of Mathematics textbooks of SSM, although the overarching framework is that of capitalist economy evident through the ways concepts like profit-loss, percentage, interest, traders' accounts, etc. are developed, there is no sight of even ‘superficial’ neutrality or modernity or attempt to shed off prejudices like many other modern textbooks of school mathematics developed for protecting interests of capitalist economies. The agenda is adequately clear – development of a *sanskari* (cultured) Hindu as against a critically thinking citizen of India.

Textbooks may be considered as passive teaching-learning materials but when children interact with them, they become active learning instruments. Thus, when students attempt to solve word-problems from SSM textbooks, what they would get even before arriving at a solution is the cultural packaging woven around the numbers. Even if a student is not able to solve a problem, can certainly grasp cultural messages like visiting temples, worshipping gods, being confined to domestic spheres (in case of female students), and so on as the desirable way of life. Considering the overall school culture in India, it is unlikely that SSMs or most other schools leave any scope for children to reject the cultural world presented formally by schools. NCF, while supporting inclusion of local knowledge and traditional skills in schools, puts a condition that “all forms of local knowledge must be mediated through Constitutional values and principles.” (NCF, NCERT, 2005 B, 32). Children’s Right to Free and Compulsory Education Act, 2009 (RTEA) also ‘guarantees’ a curriculum abiding by the values enshrined in the constitution. The irony in case of SSM textbooks is that although the word-problems are packets of regressive ideology and full of prejudices, establishing them to be ‘anti-constitutional’ in a legal framework is a tough task. As discussed above, one can show that the textbooks appearing in the form of word-problems are statusquoist, ignorant about cultural practices of marginalised sections (deliberately or otherwise) and prejudiced against women. There is no intent of challenging any of the prejudices, the textbooks rather try to cement the ones existing among children’s minds. The problem particularly becomes intense when such textbooks are read in the light of Draft National Education Policy 2019 which advocates for schools to have their own curricula and textbooks. One possibility of what can happen in the present political scenario is foretold be the SSM textbooks.

The issue in case of word-problems is that there may be textbooks which appear ‘progressive’ but yet protect interests of hegemonic groups in hidden ways, paying lip service to other cultures. Bright (2017, 8) warns us against this tokenism, this “superficial treatment of “multiculturalism” that focuses on the addition of people of color” and suggests that such inclusion “may in fact be working against some of the primary goals of a socially just society by tokenizing individuals and groups without any direct movements towards challenging the shifting other aspects of the status quo.”

Way Forward

I have provided examples from SSM textbooks showing how cultural prejudice is carried even in Mathematics. The problem of narratives in mathematics textbooks becomes further complicated when identifying undercurrents becomes difficult. A case in point is a recent textbook by Maharashtra State Bureau of Textbook Production and Curriculum Research, popularly known as Balbharati, an autonomous body under Department of School Education in Maharashtra. Balbharati is responsible for textbooks reaching more than 18 million children from more than 90,000 schools in Maharashtra. In recent revision of textbooks, Mathematics textbooks have adopted a style of conversation among students and teachers leading to development of various concepts. In one section of a chapter on Measurement (Grade IV, 2016) a boy goes to fetch grocery and in another section of the same chapter, another boy observed milk being served in cups. The chapter develops in the form of conversation in domestic setting and in both sections the person conversing with the boys are their mothers. The same textbook, while teaching pictorial representation of numerical information uses male faces to represent ‘farmer’ or ‘student’ which could be considered as neutral occupations. In last decade or so, word-problems in textbooks of Balbharati, have moved fairly ahead from habits of ‘missing

women completely' or 'confining them only to shopping', but bringing women in domestic narratives restricts the movement. Representing farmer or student as a male shows how an opportunity of challenging prejudices is missed or how prejudices are perpetuated.

With thorough analysis of 'voice' or linguistic discourse presented in mathematics textbooks through choice of verbs, pronouns and other grammatical forms, Herbel Eisenmann (2007) emphasizes the need for mathematics educators to consider deeply "the way in which language indexes a particular ideological stance" and appeals that "curriculum developers and mathematics educators need to consider more carefully what ideological goals underlie curriculum materials." As teachers and educators of mathematics, we must remember that the numbers in the word-problems may be unrealistic or irrelevant but the contexts may be real. If the contexts are not coherent to the lived experience of children and if they hesitate to challenge stereotypes embedded in those contexts or otherwise, textbooks meant to teach the so-called objective school-subject may turn out to be tools to reproduce socio-cultural inequalities. If we agree with the vision of the position paper of National Focus Group on Teaching of Mathematics (NCERT, 2005 C, vi) that "all students can learn mathematics and that all students need to learn mathematics" then we need to acknowledge that contexts presented in word-problems need to be locally relevant and progressive in their social outlook. Failure in making them locally relevant may continue perception of mathematics as the most difficult and irrelevant subject while failure in creating progressive contexts with multiple realities may make mathematics a vehicle of social inequality and subordination. As teachers and educators of mathematics, we need to be cautious about both of them.

REFERENCE

- Apple, M. (1993). The Politics of Official Knowledge: Does a National Curriculum Make Sense?, *Teachers College Record*, 95(2), 222-241.
- Apple, M., King, N. (1983). What Do Schools Teach?. In H. Giroux & D. Purpel (Eds.), *The Hidden Curriculum and Moral Education: Deception or Discovery?* (pp 82-99). Berkley, USA: McCutchan Publishing Corporation.
- Barwell, R. (2018). Word Problems as Social Texts. In Y. Keiko, Alan Rogers, K. Jackson and B. Street (Eds.), *Numeracy as Social Practice – Global and Local Perspectives* (pp. 101-120). New York, USA: Routledge.
- Bright, A. (2017). Education for Whom? Word Problems as Carriers of Cultural Values. *Taboo: The Journal of Culture and Education*, 15 (1), 6-22.
- Chauhan, M. (2011). Gender Construction Through Religious Narrative in Saraswati Shishu Mandir School. *Proceedings of the Indian History Congress*, 71, 1189-1195.
- . (2012). Gender and Nation in Shishu Mandir School Text Books. *Proceedings of the Indian History Congress*, 73, 1376-1385.

- Darak, K. (2013). Pathyapustakanchya Antarangat (Marathi). *MahaAnubhav*, September, 32-37.
- Gandhi, M. K. (1939). Text Books. *Harijan*. September 9.
- Halai, A. (2007). Boys are Better Mathematicians! Gender Issues in Mathematics Classrooms in Pakistan. In R. Qureshi and J. F. A. Rarieya (Eds.), *Gender and Education in Pakistan* (3rd ed.). (pp 109-125). Karachi, Pakistan: Oxford University Press.
- Herbel-Eisenmann, B. (2007). From Intended Curriculum to Written Curriculum: Examining the “Voice” of a Mathematics Textbook. *Journal for Research in Mathematics Education*, 38 (4), 344-369.
- Ilaiah, K. (1996). *Why I Am Not A Hindu : A Sudra Critique of Hindutva, Philosophy, Culture, And Political Economy*. Calcutta: Samya.
- Kumar, K. (2004). Origins of the Textbook Culture. In Krishna Kumar (Ed.), *What is Worth Teaching* (pp 23-41). Hyderabad, India: Orient Longman.
- Kwong, J. (1988). Curriculum in Action – Mathematics in China’s Elementary Schools. In P. G. Altbach and G. P. Kelly (eds.), *Textbooks in the Third World: Policy, Content and Context*. (pp 227-245). New York, USA: Garland Publishing.
- NCERT. (2005 A). Position Paper of National Focus Group Paper on Education of SCs and STs. New Delhi, India: NCERT.
- . (2005 B). National Curriculum Framework. New Delhi, India: NCERT.
- . (2005 C). Position Paper of National Focus Group Paper on Teaching of Mathematics, New Delhi, India: NCERT.
- Sundar, Nandini. (2004). Teaching to Hate: RSS’ Pedagogical Programme. *Economic and Political Weekly*, 39(16), 1605-1612.
- Tate, W. F. (1994). Race, Retrenchment, and the Reform of School Mathematics. *The Phi Delta Kappan*, 75(6), 477-480 and 482-484.
- Ukpokodu, O. N. (2016). *You Can’t Teach Us If You Don’t Know Us and Care About Us: Becoming an Ubuntu, Responsive and Responsible Urban Teacher*. New York, USA: Peter Lang.
- Xing, Z. (2010). *Preserving Cultural Identity through Education: The Schools of the Chinese Community in Calcutta, India*. Singapore: Institute of Southeast Asian Studies.

Textbooks Used in Analysis

- Saraswati Ganit Mala. (2004). Grades 3, 4, 5. Mathur, India: Saraswati Shishu Mandir Prakashan
- Ganit Grade 4 (2015). Pune, India: Maharashtra State Bureau of Textbook Production and Curriculum Research.