

Portrayal of Farmers and Agriculture in School Textbooks

Manisha Subba and Divya Sharma

Assistant Professor, Mata Sundri College for Women (University of Delhi), New Delhi-110002, India

Corresponding author:- Divya Sharma

Abstract

Considering the role of schools in socialisation of children with respect to developing consciousness for their own socio-cultural contexts as well as nurturing empathy for others, it is imperative that school curriculum should critically engage children in relevant issues of local, national and global concerns. School textbooks, being an indispensable learning material in majority of the Indian classrooms, continue to be the only source of knowledge for a large number of students. Children tend to build many of their perceptions through representations in their school textbooks in context of work, gender, class, caste and similar social concepts. The Indian economy is dependent to a large extent on its agricultural sector, but it is mostly neglected in terms of everyday active discussion. It implies that agriculture related concerns and issues should appropriately be reflected in our school textbooks to enable children to develop into the informed citizens who can make conscious choices and contribute towards building an egalitarian society. The authors have presented their findings of a critical examination of the science and social science textbooks prescribed from classes 6 to 10 by NCERT, highlighting the overall nature of conceptual coverage, imaging of farmers and range of contemporary issues related to agriculture.

KEYWORDS- School Textbooks, Agricultural Literacy, Critical Pedagogy, Science Curriculum, Social Science Curriculum, ESD (Education for Sustainable Development)

Introduction

It is beyond doubt that schools are one of the major agencies for socialisation of children. Both *explicit* and *implicit* curriculum followed at schools craft lifelong impressions on children's personalities and value systems. It is necessary that school knowledge should be connected to the multiple contexts of the society to which children belong, whether directly or indirectly. This facilitates development of consciousness among children for their own socio-cultural contexts as well as nurturing empathy for those of others. In the same fervour, the present National Curriculum Framework (NCF-2005) in India recommends for critical pedagogy that provides an opportunity to reflect critically on issues in terms of their political, social, economic and moral aspects (NCERT, 2005, p.23). NCF-2005 also realised the curricular significance of various areas of human knowledge like pottery, agriculture, carpentry and so on, not just as forms of work but also as forms of knowledge. The social science curriculum stresses on perspective building, inclusion of contemporary issues, focussing on social and economic challenges, relating the content to children's everyday life (NCERT, 2006, pg.6-7).

The attempt to undertake this study was to connect the issue to the larger understanding of Education for Sustainable Development focussing on building

'knowledge, skills, attitudes and values necessary to shape a sustainable future' (UNESCO, 2014). The objective of taking this particular theme of farmers and agriculture was because these are issues which the people are directly engaged with and dependent on. If developed with ESD framework, the theme can be planned holistically focusing on issues of sustainability across environmental, economic and social domains. Hence, it would be significant to lay emphasis on integrating concepts and concerns related to the theme across all the subjects and across all levels, within the school curriculum for a holistic understanding of the theme. Agriculture is the most important sector of the Indian economy being the largest livelihood provider at present and significantly contributes to the Gross Domestic Product (GDP) of the nation (CSDS, 2015). In India, it holds not just economical, but social, cultural and political significance as well. Despite Indian agriculture leading in production of major food and cash crops, spices and fruits; farmers in India are continuously confronted with several issues. Some major issues like costly farm inputs, agricultural marketing, impacts of global climate change, decreasing soil fertility and groundwater reserves, farmer suicides are to mention a few.

Centre for the Study of Developing Societies (CSDS, 2015) conducted a survey across 18 states of India to understand the state of farmers in the country. The study highlighted the socio-economic profiles of Indian farmers and their problems along with other related aspects of their economic, social and political life. Findings revealed that the majority of farmers admitted that the overall condition of farmers in our country is bad due to multiple problems faced by them which are chiefly concerned with productivity, income, labour, irrigation, floods, droughts and inflation. Majority of the farmers don't even want their children to follow farming despite this being their ancestral occupation and rather prefer them to settle down in cities. However, all such issues linked with agriculture and farmers' lives are not discussed actively and critically within larger social networks. Infact, the majority of our urban inhabitants stay ignorant and apathetic towards all issues. That is why, the effort to analyse the existing representation in the school textbooks has been made.

Literature Review

Inclusion of agriculture and related concerns is generally found in school curriculum of different countries up to varying extent due to some potential merits. Bergmann (1985) discussed the following major reasons for including agriculture in school curriculum -

- (i) *normative-ideological reasons*- to instill value of manual work and dignity of labour among learners;
- (ii) *considerations of teaching methods*- to promote learning by real- life experiences and within natural settings instead of chalk and talk methods;
- (iii) *developmental reasons*- to orient pupils towards rural development related problems and providing them with the relevant skills for development-orientated action in agriculture;
- (iv) *skill development*- to develop useful skills among learners by having a pre-vocational or vocational orientation of school subjects;
- (v) *economic reasons*- to generate income for the general running of school itself and also using it as a low cost alternative of teaching science subjects.

Bergmann (1985) maintained that these reasons often lead to the major objectives of including agriculture related topics in school curriculum. He also talked about the major approaches of integrating agriculture in school curriculum that he termed as- (i)

the vocational/pre-vocational training approach, (ii) the science-related approach, and (iii) the extensionist approach. He argued that where vocational and extensionist approaches are limited in use, the science-related approach is widely accepted and practiced mainly due to the broadness in its aims, content matter, teaching methods, attitude towards farming and the expectations from teachers.

In addition to this, children should also be made aware of their local indigenous knowledge as well as contextual issues through their formal school curriculum which is significant from the perspective of ESD. Vallera and Bodzin (2016) envisaged the concept of ‘agricultural literacy’ in response to the educational reforms of integrating agriculture with science, environmental education and ESD. Their idea suggests that integrating agriculture across the curriculum promotes agricultural literacy among students. It may be done using community participation, co-curricular activities, projects or field experiences along with everyday classroom based teaching. Shukla, Barkman and Patel (2017) conducted a case study to explore and establish school competition as a pedagogical strategy to promote learning of ‘Indigenous Agricultural Knowledge’ (IAK) in formal school settings in order to safeguard the existing and future food security of local communities.

Given that the students, teachers and parents are the important stakeholders for school education, their perceptions about inclusion of agriculture related concepts and issues are really significant to be understood. It is necessary for teachers to be able to view the significance and possibilities of this integration in a positive way. Knobloch (2008) analysed the factors underlying elementary teachers' beliefs regarding integration of topics and activities related to concepts like food, agriculture and natural resources into the elementary school curriculum of Iowa, USA. The teachers were found to have positive attitudes towards integrating agriculture related topics within the elementary school curriculum and they deemed it valuable for students as well as feasible for interdisciplinary learning well connected with real life contexts. Another study by Balschweid (2002) showed that the high school students started to appreciate the importance of agriculture and those who work in agriculture after participating in a yearlong biology class that used animal agriculture as the context. Almost 80% of them began to consider that raising animals for food and/or being a farmer is a noble profession. A study conducted by Yadav and Ali (2016) in five villages in Rewari District of Haryana highlighted that the majority of parents in rural areas in India favour agricultural education for their children since it is the primary source of livelihood for them.

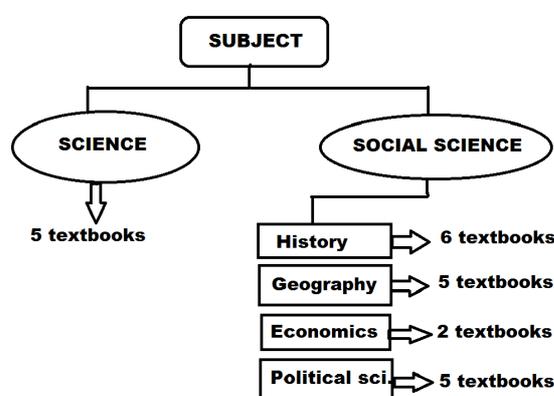
Schooling can play a significant role in shaping students' perceptions towards agriculture. Njeru, et. al. (2015) discussed various factors that are responsible for poor perception of youth towards agriculture of which education related reasons are in majority. They highlighted that ‘agriculture is seen as a less worthwhile subject or as a last resort for under-achievers hence influencing rural youth aspirations in a negative way; while urban students see agriculture as a dirty job’ (p.41). When it comes to the classroom transaction of the curricular content then we must note that textbooks are quite indispensable teaching-learning material for most of our teachers and students where they rely very much on textbook content and activities (Kaur, 2017). Children tend to build many of their perceptions through representations in their school textbooks in context of work, gender, class, caste and similar social concepts. It is imperative that school textbooks should be aptly designed to critically

engage students with all forms of knowledge and contemporary issues linked with them. Vallera and Bodzin (2016) analysed content of 12 current upper-elementary US science textbooks and curriculum programs to examine the representations and contexts of agricultural literacy. The findings revealed the reviewed materials did not include thorough representations of agricultural concepts or a wide distribution of 'knowledge, skills, and attitudes/beliefs about agriculture' and lacked systematic development of agricultural concepts.

Such understanding about the contribution of school curriculum and textbooks in specific towards shaping children's perceptions and promoting agricultural literacy among them inspired us to enquire into the way integration of agriculture has been done in contemporary school textbooks in India.

Materials and Methods of Study

As we have already stated that school education has a potential for generating appropriate consciousness and empathy among young generations towards issues and challenges faced by the agricultural sector; provided necessary inputs are ensured through textbooks content and teaching-learning activities. Hence, the need to critically analyse school textbooks was realised to examine portrayal of farmers and related issues of agriculture in them. NCERT school textbooks of only two subjects were chosen for the content analysis, i.e., science and social sciences prescribed from classes 6th to 10th. These two subjects are expected to include related topics and issues of agriculture as per their nature. Thus, the choice of textbooks was made according to the nature of the subject and their alignment with the ideology of NCF-2005 being prescribed by NCERT itself. Total 23 textbooks were analysed for the purpose as depicted in figure-1 given below-



(Figure-1: schematic layout of the textbooks selected for analysis)

Major parameters chosen for textbook analysis were-

- Extent of agriculture related content included
- Key concepts and issues related to agriculture that are covered
- Nature and relevance of activities, projects, illustrations, and exercises
- Perspectives building of farmers and agricultural activities in terms of representation

Results

Following sections summarize the inclusion of agriculture related content from NCERT's Science and Social Science textbooks spanning from class 6th to 10th.

Farmers and Agriculture Related Activities in Science Textbooks

The analysis of science textbooks revealed that class 6 and 10 do not have exclusive chapters linked with agriculture. However, chapters on separation of mixtures, plant nutrition, soil, and water have some references to agricultural processes that might enable learners to decipher inter-linkage of various concepts in science textbooks. Similarly, class 7 textbook has linked certain concepts with agriculture, like plant nutrition, pH of soil, irrigation systems, type of soil and the crop grown in it, across different chapters. It facilitates laying foundations for scientific understanding of the concepts related to agricultural activities.

Science textbooks for class 8 and 9 have given due weightage to agriculture as an important human activity involving several tools and techniques having important implications for science and technology. Class 8 textbook extensively deals with agricultural practices in its very first chapter. It includes descriptions on agricultural processes, tools and techniques used in past and present. Learners are exposed here about conventional as well as modern techniques used in agriculture and related sectors. One chapter on 'Cells' also asks children to do projects to find out the merits & demerits of genetically modified crops from agricultural experts in the area.

Class 9 textbook extends the conceptual base from the previous class through the chapter which deals with the need for sustainable practices in agriculture and animal husbandry. It includes modern crop improvement and management techniques used to ensure improved crop yields and resolving challenges of hunger and food security in India. Also, in a chapter on natural resources, learners are acquainted with adverse impacts of chemicals used in modern agricultural practices on the environment.

Overall, science textbooks are only offering descriptions on agriculture related practices and their scientific and technological basis. Mainly factual knowledge about scientific and technological aspects of agriculture related activities is found in these textbooks with comparatively little focus on promoting sustainable agricultural practices and other ESD goals. A brief discussion on the problem of hunger, malnutrition and food security in our country (class 9); mention about fertilisers and pesticides being cause of soil and water pollution (class9) and a small excerpt on traditional irrigation systems in India (class 10) were observed as the mere attempts to connect science with ESD. Apart from these, the science textbooks are only concerned about scientific tools and techniques in agriculture without any connection with ESD related themes.

It is realised that these science textbooks do not engage learners critically with recent issues related to socio-political and ethical concerns linked to modern agricultural technologies. Presenting science and technology without cognizing their interaction with social interface tends to develop a lopsided perspective to the learners. Such as merely suggesting projects on visiting local agriculture extension centre to know more about GM crops and finding out advantages and disadvantages of *Bt cotton* from agriculture experts (class 8) or to investigate how farmers dealing with acidic/basic nature of soil (class7) in the end of some chapters does not ensure that children would

have been engaged in such issues within their classrooms, simply because such concerns have not been raised within the main content of textbooks which is primarily attended by the teachers and learners.

Farmers and Agriculture Related Activities in Social Science Textbooks

(A) Inclusion of agriculture related content in History textbooks:

History textbooks emphasize on the imaging of farmers in the pasts, using various historical evidences across empires. Class 6 textbook presents the conditions that led to domestication of plants and animals, and how it contributed to the coming of settled life. Rather than giving factual information of what must have happened in the past, the textbook introduces students to using these primary sources to reconstruct the customs and practices of the first farmers and herders, the crops cultivated at that time, the agricultural tools used and so on. These chapters discuss the various irrigation interventions, the mutual dependence of farmers and rulers and how the coming in of agricultural production in the villages contributed significantly in the growth of the earliest cities and many kingdoms such as the Mauryan empires. The chapters in class 7 textbook builds upon the collaborative works of the kings and villagers in planning, organizing, maintaining and shared decision making, based on historical sources. The chapter on the Cholas Empire highlights the same, stressing on how agricultural progress contributed to the success of the empire. This need to invest in the agricultural process and the continued historical collaboration is a continuous narrative in the history textbooks.

Class 8 to 10 history textbooks portray the struggles of farmers in different historical regimes across the world, using many primary sources for a meaningful class discussion and introducing students to the crafts of a historian. Students are introduced to colonial agrarian policies and its impact on the peasants and the *zamindars*, leading peasants to rebel and revolt. There are detailed discussions on various forms of tribal societies and how colonial interventions led to changes in the tribal societies and economies, ultimately leading to retaliation in the form of tribal revolts. The demands for economic as well political freedom from high wages, access to forest resources, tax reduction have been highlighted in the textbook.

Class 9 textbook traces the condition of peasants in French society, the important role of peasants in the Russian Revolution, the implementation of Forest Rules and its effect on cultivation in different parts of the world, the impact of modern agriculture and its integration with the capitalist world market. The chapters raise farmers' issues in the historical contexts of various nations and how it impacted the socio-political scenarios, focusing on similar processes of struggles but taking different historical trajectory in different parts of the world. Class 10 textbook depicts the economic hardships faced by peasants in Europe and India resulting in peasants' protests and uprisings. We see there is a detailed depiction of farmers and farmers' issues in the History textbooks with an active agency played by them in contributing to the growth of economy, rise in cities and standing up for their rights and demands when needed.

(B) Inclusion of agriculture related content in Geography textbooks:

Geography textbook of class 6 has discussed various agricultural practices on different landforms. Though not in detail, the role of a specific landform as conducive for human habitation is stressed both in the text as well in the end-text question, such as the requirement of flat land for building houses and cultivation is mentioned. Further in Class 7, the role of the women in agriculture in the Rainforests is mentioned, the staple foods of the region are listed and the process of Slash and Burn is discussed. Similarly another chapter, details about agriculture as the main occupation of people living in the Gangetic plains due to fertile soil. Class 8 Geography textbook discusses agriculture as a primary production activity and highlights the importance of land as a resource. Another chapter discusses causes of soil degradation due to use of chemicals in agriculture, various methods of soil conservation, the types of agriculture, the major crops grown in different types of farming in India and the world; with a comparison of agricultural development in India and USA. Class 10 textbook also discusses on cropping patterns, food security, impact of globalization on agriculture; there is a continued discussion on land resources, reasons for land degradation and soil erosion; methods to conserve soil and making students aware on irrigation techniques in the ancient and medieval times; sensitizing students on the role of multi-purpose river projects; studies of displacement and resistance by the people raising questions on access and inequitable distribution of resources; awareness building on the ecological effect of over irrigation, and its impact on the social structure; providing information on types of farming, cropping pattern, various technological and institutional reforms; inadequacy towards interventions in the agricultural sector; help acknowledge the contribution of agriculture to the national economy, employment and output in the past; but on a decline or stagnant rate presently; reasoning the decline in food production; building the historical and contemporary narratives about globalization and its impact on agriculture. Though mostly factual and informative, the Geography textbooks do raise pertinent issues related to agriculture, land resource and its contribution to the nations' economy as well as an attempt to engage in sustainable production.

(C) Inclusion of agriculture related content in Political Science textbooks:

The analysis of Social and Political Life textbooks suggest that agriculture as a concept is discussed briefly in class 6 in terms of rural livelihoods; the types of farmers as a comparative narrative in their differing conditions in terms of functioning and landholding; sensitizing students to issues of loans and debts affecting farmers through first person case narratives. Class 7 textbook provides information on the contribution of women in the agricultural sector stressing the need to acknowledge their important role in this sector; the agricultural work done by them which helps to address the occupational stereotyping held by the society who sees farmers as only males. Class 8 textbook builds upon the marginalized Adivasis community and their contribution in the growth of empires and economy historically; the practice of sustainable means of production through shifting cultivation and their role in the conservation of forests. There is an attempt to debate regarding displacement and disposition vs. development, the need for protection of Adivasi groups citing Fundamental Rights, various laws and Acts; there is an attempt to problematize with an open conclusion on whether rights and laws on paper actually translate into practice using case studies and issues. The

textbooks deal with the concept of agriculture and farmers by stressing on how they have been contributing to the nation's economy, the need to recognize farmers as a political group and the right to struggle, write, negotiate and organize themselves in a democratic society.

(D) Inclusion of agriculture related content in Economics textbooks:

The analysis of economics textbooks revealed a major thrust on introducing agriculture as the main production activity in rural areas and the primary economic sector in India. A comparison of the Indian agriculture sector in terms of its share in the country's GDP and employment with that of secondary and tertiary sectors has been done in class 10 economics textbook. The textbooks have touched upon prevalent issues in the agricultural sector such as unequal land distribution, poverty among small farmers and agricultural labourers, seasonal and disguised unemployment, loan-debt traps.. These issues have purely been projected as an impact of socio-economic profiles of farmers, conventional challenges with farming and disparities in rural India. In a way, an attempt has been made to put forward the role of agriculture in the Indian economy and highlight some of the issues faced by farmers. But other significant dimensions have been untouched in these books that have affected the agriculture sector to a large extent in recent years. For instance, adverse impacts of modernization and corporatization of agriculture have not been addressed in these books. Class 9 textbook has highlighted the role of the Green Revolution as a means of ensuring food security in India and glorified it as a landmark in the history of the Indian agriculture sector. However, it has not touched upon the adverse effects of the Green Revolution on Indian agriculture and farmers' lives in specific. Impact of globalisation on the Indian economy has been presented in general but nowhere has it highlighted the challenges to the agriculture sector due to introduction of modern technologies like GM crops, issues of seed patents and similar trends affecting farmers' socio-economic life.

Similarly, these textbooks have represented both male and female farmers through various illustrations and case studies which indicates the contribution of both men and women in agriculture and consequently towards the country's economy. However, it has not addressed the inequality of work conditions, disparity of wages and other challenges women face being engaged in agricultural activities. Many times their contributions as agricultural labourers goes unnoticed and unacknowledged. Any official data underrepresents the economic contribution of women in agricultural income. These textbooks could have been a bit realistic while portraying the status of women in the Indian economy, specifically in the agricultural sector.

Discussion

Detailed analysis of content given in all the textbooks chosen for the study reveals a wide spectrum of representation as far as the content and concerns of agriculture are concerned. Both science and social science subjects have immense scope for including agriculture and related issues but portrayal in some of the present textbooks is not up to the expectation. There is no uniformity in portrayal of farmers and agriculture across the subjects and grades as found in the study. However, some commonalities can be seen in the way content is presented in these textbooks. Special

emphasis on agriculture has been laid by including separate chapters in science (class 8 and 9), history (class 6, 8 and 9), geography (class 8 and 10), social and political life (class 6), economics (class 9) textbooks. Other textbooks have linked applications and implications of certain concepts with relevant agricultural practices, ranging from merely one paragraph to a complete section. It shows that agriculture related content is given more recognition in science, history and geography textbooks as devoted chapters for the cause, whereas in political science and economics textbooks it is portrayed mainly in related contexts of livelihood and economic activities.

Further, it has been noticed that science and geography textbooks deal mainly with the conceptual and technological knowledge base required for agricultural practices. Significant socio-political, cultural and ethical issues related to agriculture are neither much highlighted nor critically debated in textbooks of these two subjects. Some environmental issues such as water pollution, soil pollution, impact on the water table due to agriculture are touched upon but not really facilitating learners' engagement in related debates. Ground realities of modern day agriculture, challenges and struggles of farmers are not adequately portrayed in these subjects. On the other hand, history and economics textbooks have tried to problematize issues related to agriculture such as agricultural processes, farmers' conditions and hardships faced. These textbooks have content which is able to engage children through discussions and reflections around the above issues using primary sources, case studies, charts, graphs, narratives, projects and so on. History textbooks have accorded significance to farmers by socio-political positioning in the past but not given much prominence to their roles in contemporary times. A continuity from past to present in terms of farmers' contribution and importance is missing in the textbooks, which may lead to learners questioning the relevance of studying historical perspectives on farmers' issues and agricultural concerns.

A learner deals with all the subjects at a time in a particular grade. A logical continuity of concepts with successive grades, like in a spiral curriculum, and integration across subjects would help learners to make useful linkages and applications of learnt concepts. However, it was found that instead of continuity and integration of agriculture related concepts and issues across grades and subjects, these textbooks have repetition and overlapping of concepts as well as some conceptual gaps.

Conclusion

School education should be able to invoke critical consciousness among young minds for these real life issues and contemporary debates. Considering that most of our students are supposed to attain at least their elementary level education upto class 8 by virtue of Right to Education, it seems justified to expect inclusion of basic information on agriculture and farmers at least till their elementary grade textbooks. The objective should be to well integrate the curriculum with Sustainable Development Goals as well as historical and contemporary issues from the field. A well thought representation of agriculture related concepts and issues in the mainstream curriculum would not only create opportunities for educating children for sustainability but also help bridge the occupational stereotyping, acknowledge gender representation, build critical perspectives, and bridge the rural-urban divide that we see in the mindset of our youth these days. We suggest that textbooks could be improved with a justified portrayal of agriculture related content by promoting

integration instead of compartmentalisation of concepts; avoiding mere repetitions of the same content across subjects at a grade and putting concepts in a spiral manner from lower to higher grades; bridging the conceptual gaps by building upon concepts learnt across grades and subjects; appreciating historical narratives, integrating environmental aspects of sustainability, analyzing policies, problematizing issues, highlighting contemporary social, economic and political challenges; valid representations of reality through multiple perspectives i.e., scientific, social, cultural, political, economical, environmental, human rights and ethical concerns; rather than the mere provision of factual knowledge in the textbooks and eventually the classrooms.

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