EpiSTEMe Submission 20

SOCIOSCIENTIFIC ISSUES AND SCIENCE EDUCATION

AUTHORS

Vishal Kumar

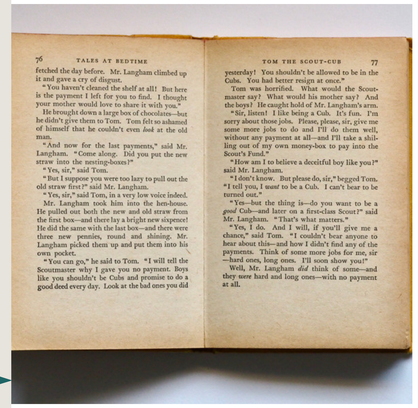
Sanjiv Kumar Choudhary

AFFILIATIONS

Birla institute of Technology and Science, Pilani

INTRODUCTION

LITERATURE REVIEW



LITERATURE RELATED TO REVIEW OF TEXTBOOKS IN LIGHT OF SOCIOSCIENTIFIC ISSUES

LITERATURE RELATED TO STUDIES ON STUDENTS' UNDERSTANDING

LITERATURE REVIEW RELATED TO TEACHERS' UNDERSTANDING AND PERCEPTION ABOUT SOCIOSCIENTIFIC ISSUES

SOCIOSCIENTIFIC ISSUES

SCIENTIFIC LITERACY

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INTRODUCTION

- Indian constitution guarantees Right to Elementary Education (RTE, 2009) to every child until the age of 14.

- Science education starts from class 3 itself (Environmental Science) and is mandatory till 10th class.
- Policy documents in the past have emphasized the need of cultivating scientific temper, critical thinking and scientific literacy among students and have mentioned these as the significant objectives of science education.
- The curriculum of science textbooks is too laden with information and gives little or no scope for students to discuss social and daily life problems.
- Scientific literacy is considered to be one of the significant goals of science education worldwide which enables students to place science and technology in a social context and scrutinize it.

LITERATURE REVIEW

Scientific Literacy

Hoolbrook and Rannikmae (2009) have put forward a detailed relevance based definition of scientific literacy for science education, “Developing an ability, to creatively utilize appropriate evidence-based scientific knowledge and skills, particularly with relevance for everyday life and a career, in solving personally challenging yet meaningful scientific problems as well as making, responsible socio-scientific decisions”

Socioscientific Issues:

These issues have a basis in science, involve forming opinions and making personal and social choices, and are frequently reported in the media, have incomplete scientific evidence and incomplete reporting, have local, national and global dimensions, involve cost benefit analysis, consideration of sustainability and ethical reasoning.

LITERATURE REVIEW

Teachers

Liu et al. (2015) reported that many teachers did not feel themselves equipped with enough knowledge to teach climate change.

Students

Students' conceptions about scientific concepts which have dominant space in textbooks and assessments only have been explored but the concepts/issues which are relevant to the students and have social and scientific implications in their lives have been ignored.

Textbooks

Textbooks are one of the most significant teaching learning materials that are used most of the time especially in the Indian context. Genetic technology and climate change were the two most prominent issues (50% and 21% respectively). The space percentage for these two socioscientific issues was higher than the others. (Morris, 2014)

RESEARCH GAP

- All the studies done regarding such issues in European and American context
- Looked into issues which are relevant for the society at the broader level.
- Issues such as evolution, use of animals for medical testing and many other issues in biology education have been already explored multiple times.
- This study proposes to look into the students' arguments, knowledge and beliefs about such issues which are personally relevant to them and their community.
- Because there is a strong moral and ethical dilemma regarding these issues, it would be interesting to see whether they are willing to participate in a sociopolitical action for this issue.

Contextualisation of science concepts helps students in understanding concepts better as they get a chance to connect the local context with the global understanding. Similarly, socioscientific issues which are specific to the students' context can help in developing their scientific literacy and make them aware about the problems within their communities and this also opens a door for contemplation about the possible solutions. Hence, there is a need to look into the perceptions and understanding of science teachers, students from a specific community about socioscientific issues emerging from their own context and how such issues can be implemented or used in the science classrooms.