

Name of the Scholar: *Mira Mishra*

Name of the Supervisor : *Prof.Sohrab Ali*

Department: *Institute of Advanced Studies in Education (IASE), Faculty of Education*

Title of the Study: *A Study of Science-Technology-Environment-Society (STES) Components of Science and Technology Curriculum and its effect on the development of Higher Order Cognitive Skills (HOCS) among the Secondary Students.*

Key words

Science - Technology- Environment - Society (STES) approach, Science - Technology- Environment - Society (STES) issues, Higher order cognitive skills (HOCS), Problem solving, Decision making, Question posing, Science education

The capability to use science in a discreet and productive manner is the expertise which the schools overlook in their course of action. The focus of science education has been accretion of knowledge in most of the countries. But the rapidly advancing humanity demands education which facilitates the learners to effectively implement their learning in a reflective and intricate manner. This is evident in the from the curriculum reforms around the world where the focus is on the development of cognitive processes of the learners. In recent times the reformers of science education has directed their consideration towards the attainment of scientific literacy. Since a scientific literate person possess the skills to make effective usage of their scientific knowledge and makes rational decisions which requires effective usage of the cognitive skills. Researchers have suggested various methodologies and one of the most successful and effective methodology to infuse scientific literacy is the implementation of Science-Technology-Environment-Society (STES) approach. National Curriculum framework (2005) has also emphasised that science learning at the secondary stage should equip the learners with the expertise so as to enable them to appreciate the interface of science, technology and society. The

present study explored the manner in which the secondary students employ their cognitive skills when they encounter STES issues in their science teaching learning process.

The findings of the study reveal that there is urgent need to re-define the objectives of the science curriculum. The objectives lack clarity and precision in terms of the approaches which a teacher should adopt in their teaching methodologies for achieving the universal goal of scientific literacy. The NCERT science textbook encompasses a good number of STES issues but still there is adequate scope to include STES issues in most of the chapters. The interview of the secondary science teachers provided an insight into the views, challenges, aspirations and apprehensions which the science teachers face in their daily teaching- learning process. The lack of awareness of the STES issues and also of the methodologies for promoting the higher order cognitive skills was evident from the findings. The observations of the science class was a realization that the development of cognitive processes of the students is still not the priority as the coverage of the course content is given precedence by the teachers due to various constraints.

The findings of all the four STES themes suggests that the students have attempted to make effective usage of their higher order cognitive skills while dealing with the STES issues in all the given four scenarios. The study reveals that students have effectively identified the problem but are unable to explain valid reason of the problems. The percentage of students have gradually declined from the first step of the problem solving to the last stage which was decision making. The study suggests pedagogical implications in the form of possible incorporation of STES issues in the present science chapters of the NCERT science textbooks. The present study contributes to the effort of achieving the universal goal of scientific literacy by denoting the importance and constructive role of Science- Technology- Environment- Society approach and issues in the science education.