

Name of the Scholar: Aerum Khan

Name of the Supervisor: Prof. Shoeb Abdullah

Department: Institute of Advanced Studies in Education

Faculty of Education

Jamia Millia Islamia, New Delhi

Topic: AN EVALUATION OF SCIENCE CURRICULUM IN TERMS OF SOME ASPECTS OF SCIENTIFIC LITERACY

Abstract: This study is an attempt to evaluate the Elementary Science curriculum with respect to ascertain the coverage of some aspects of Scientific literacy. Scientific literacy is an umbrella term which includes ‘awareness’ and ‘understanding’ of Science concepts used in daily life, among its many aspects. In this research the curriculum was analysed through the responses of the students completing their Elementary education, the Science teachers teaching these students, the Science teacher educators involved in teacher preparation programs, also the observed details of the Science classrooms and the critical analysis of the Curriculum Framework along with a critical review of the textbooks of Science at Elementary level were conducted, with the help of different researcher-made tools. The data obtained was analysed to examining each of the investigated aspect of scientific literacy. On the basis of the data analysis result was achieved and conclusion was inferred.

Study Area: Education, Science Educational

Objectives:

1. To ascertain students’ awareness of vocabulary of Science used in daily life.
2. To study students’ understanding of Science concepts commonly used in daily life.
3. To analyse the Science curriculum and textbooks with respect to their strength in developing Scientific Literacy among students.
4. To explore the Science teachers’ perception of Science curriculum with respect to its strength and weakness in developing Scientific Literacy.
5. To study the Science classroom transaction in terms of development of Scientific Literacy.
6. To study the perception of Science teacher educators with respect to the strength and weakness of Science curriculum in developing Scientific Literacy among students.

Methodology

This study was conducted in three phases:

- Phase 1 comprised of sampling, development of the tools, their validation and try out.
- Phase 2 comprised of the administration of the tools and collection of data from the sample students, Science teachers, Science teacher-educators.
- Phase 3 comprised of the analysis of data, interpretation, drawing conclusion and preparing report in the form of thesis.

Summary and Conclusion: Creating a global society full of scientifically literate citizens is one of the most important objectives of UNESCO’s ‘Science for All’ campaign. The conception of scientific literacy is inherent within the idea of ‘Science for All’. Every citizen must be scientifically literate i.e. every individual must have that level of awareness and understanding of Science concepts which are related to daily life activities.

It was quite shocking to find out that the average awareness level of students was found to be 33.73%, which is alarming and needs attention of all involved in Science education at school level. Among the learners who were aware about the given Science concepts, there were variations in the level of their understanding. Some were having informed understanding, some were having partial understanding and some were having no understanding at all. Informed understanding ranges from 11.11% to 88.67%. Partial understanding ranges from 3.77% to 40.84% and No-understanding vary from 7.35% to 76.81%. The data clearly revealed that children's awareness and understanding of Science concepts in daily life was very low and hence the level of scientific literacy was also very low. The findings of the study were consistent with other research findings.

Analysis of the Science curriculum framework revealed that elementary Science curriculum suggests scientific competencies for learners which push them to attain scientific literacy. The study revealed the elementary Science textbooks as a whole to be of 'average' in quality. But class VIII Science textbook, in particular was rated as 'good'.

Science teachers, with regard to their understanding of scientific literacy, were found having difference of opinion, but they were not much away from the basic concept of scientific literacy. Science teachers rated the Science books of elementary classes as: very good (14.68%), good (50.66%), average (31.33%), bad (2.66%) and very bad (0.66%). Hence it was concluded that majority of the Science teachers rate Science textbooks of elementary level as 'good'. According to Science teachers, around 50% of the Science classes are conducted through lecture method, which is a matter of concern. Despite having remarkable curriculum framework on Science education, due to average quality of textbook, low quality of Science classroom transaction, non-involvement of learners in projects, activities and discussions, less or non-integration of contents with daily life experiences of the learners, students are lacking in the awareness and understanding of Science concepts of daily life use.

No any Science teacher (0%) was found using lesson plan while teaching, 20% Science teachers were found using notes while teaching, 50% teachers were found using textbook of Science while teaching, 10% teachers were found using other supplementary materials, and 2% teachers were found using nothing at all while teaching. For developing scientific literacy among the learners, there is dire need of involving students in learning activities, integrating Science concepts with real life experiences, conducting experiments and demonstration in classes, conducting projects with students, visiting community resources of scientific importance; all these were not found satisfactory during observation of Science classroom transaction, hence development of scientific literacy is difficult without improving the teaching-learning scenario.

Interviewing Science teacher-educators generated interesting and pertinent facts with regard to Science teaching at elementary level, Science classroom transaction, pre-service and in-service teacher education programme in Science and other Science related activities. Most of the Science teacher educators (100%) had the opinion that developing scientific literacy should be a compulsory objective in teaching of Science but for achieving this we require to emphasize more on its application, laboratory work, hands-on-activities and empirically tested learning by students than simple lecturing in classrooms, also the assessment strategies have lot of weaknesses as they are more focused on the questions and exercises given at the end of the chapters. They also opined that the patterns of CCE have been implemented but the in-service teachers are not trained enough to evaluate it according to the essence of the system and continue conventionally. 75% of the respondents said that the present pattern of assessment is more dependent on paper pencil type of test.

